THE LEADING PHOTOGRAPHIC MAGAZINE

Popular Photography

FEBRUARY
25c

Television
NEEDS
CAMERAMEN

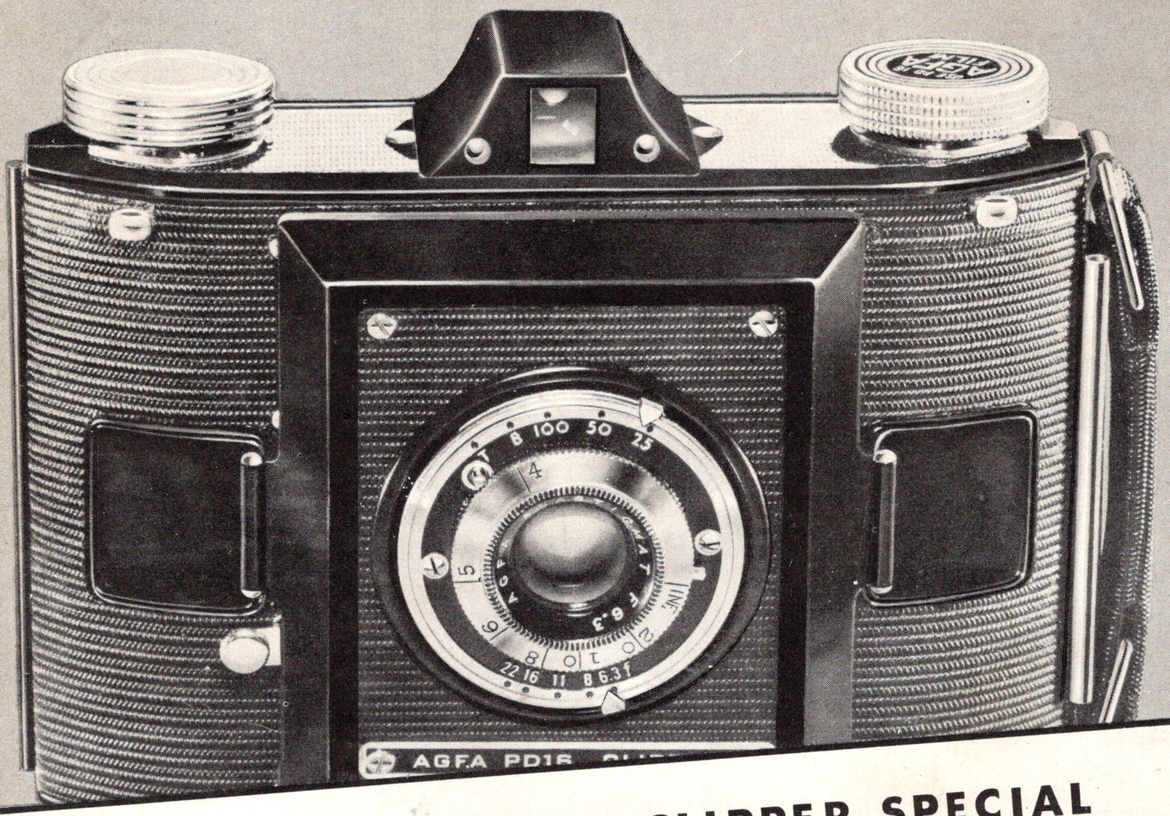
Effective
PORTRAIT
LIGHTING

BUILD AN
ENLARGER-
PRINTER

HOME
MOVIE
THEATERS

COLOR PHOTOGRAPH
by RUTH SAGE
SEE PAGE 74

The Camera Value of the Year!



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VOL. 29 No. 2 CHICAGO, ILL. FEBRUARY, 1939

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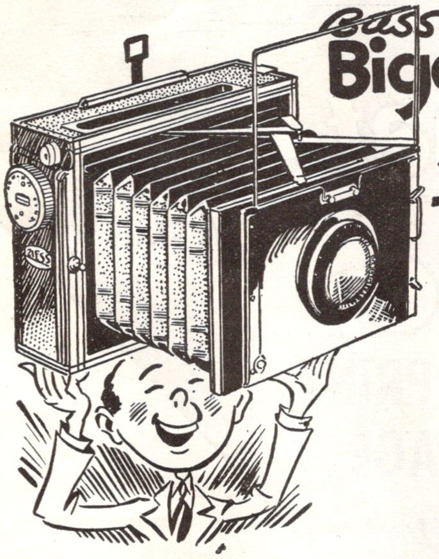

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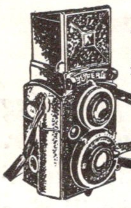

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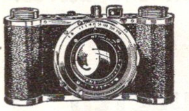

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Charles Bass
President.

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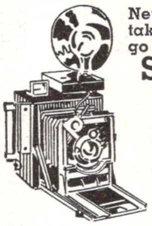

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The World's Finest 16mm and 8mm Motion Picture Cameras. Precision Built for the Most Critical Amateurs!

The versatility, precision construction and unequalled performance and superior photographic results obtained with the professional BOLEX Model H-16 are characteristics enjoyed and acclaimed by thousands. Every BOLEX is custom-built by E. Paillard & Company of Switzerland . . . makers of fine watches and precision instruments since 1814.

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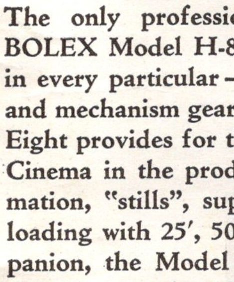

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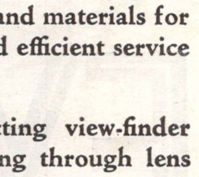

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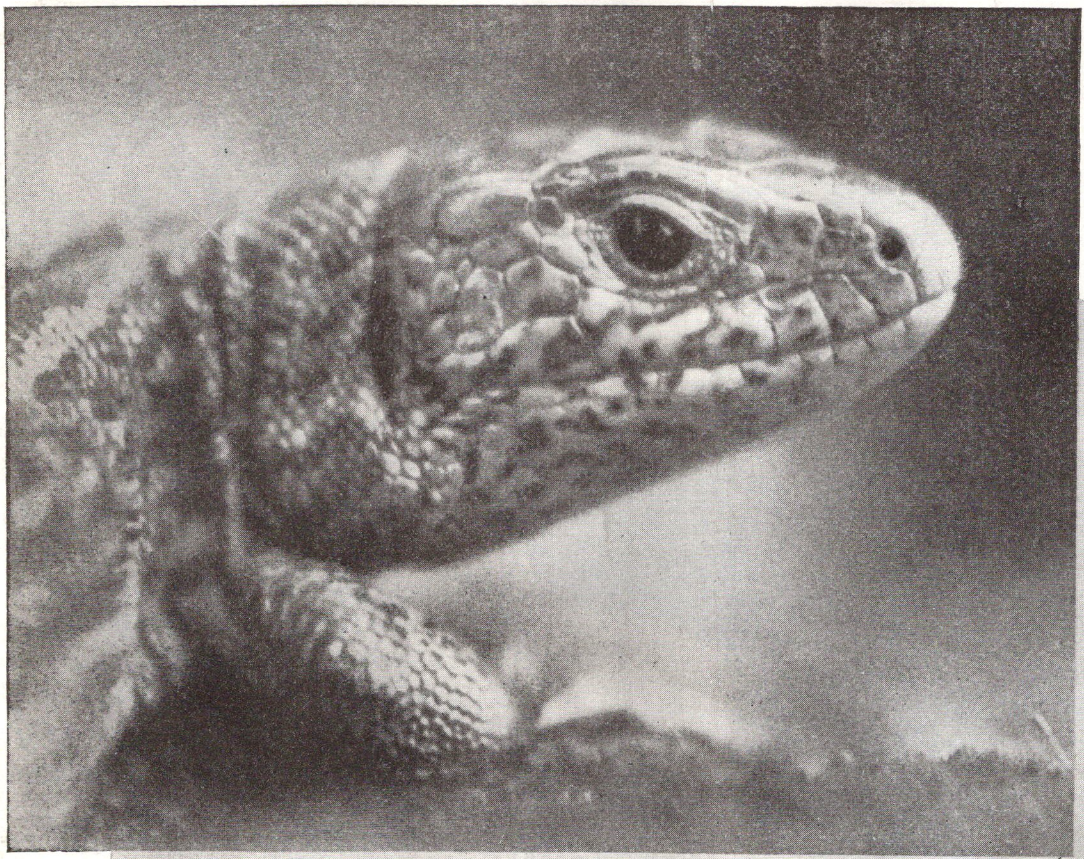
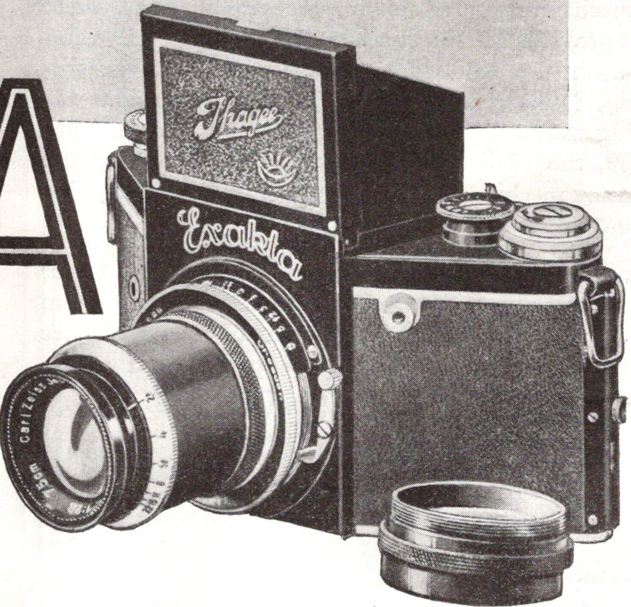


EXAKTA

Whether working at a distance of 10 ins. or 10 miles —the EXAKTA ground glass will show the correct focus.

Close-ups like this with intermediary tubes and spare lenses and **distant pictures** with telephoto lenses up to 25 cm. focal length. The picture can be composed on the ground glass perfectly free from parallax and in exact focus. The lens can, of course, be changed at any time, even with loaded camera.



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STANDARD EXAKTA for the advantageous roll film, small picture size of 2½x1⅝ ins. (4x6.5 cm.)

KINE EXAKTA 1½x1 ins. (24x36 mm.) for the economical cinema film (36 pictures with a single loading).

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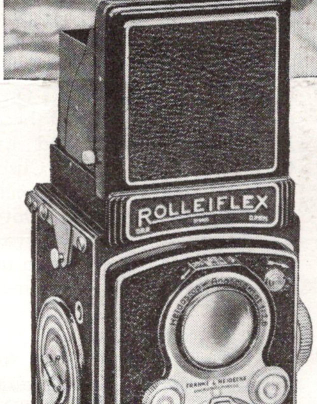
716 No. La Brea Avenue, Hollywood, California

STOP 'EM IN THE AIR
WITH A Rolleiflex

Photo by Herbert Matter, with 6 x 6 cm. Automatic Rolleiflex, f/5.6 at 1/500 second



THE NEW AUTOMATIC ROLLEIFLEX is streamlined. No protruding gadgets. Everything is built-in—entirely out of the way and protected. With Zeiss Tessar f/3.5 lens in Compur Rapid delayed-action shutter, (speeds from 1 sec. to 1/500), complete with case. **$130**

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Rolleicord Ia with Zeiss Triotar f/4.5	$47.50
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TOP-FLIGHT professionals and amateurs know that Rolleiflex stops action *cold!* Its Compur Rapid shutter at 1/500 is fast enough to freeze almost any motion. Rolleiflex gets into action faster, too. A turn of the crank transports film and resets the shutter, making it possible to take as many as 12 sequence pictures in 12 seconds. It is *impossible* to make blanks or double-exposures. You see each picture in actual size *before you make it.* And you get 12 pictures, 2¼" x 2¼" on each roll of economical No. 120 roll film. See Rolleiflex and Rolleicord cameras at your dealer's *now.*

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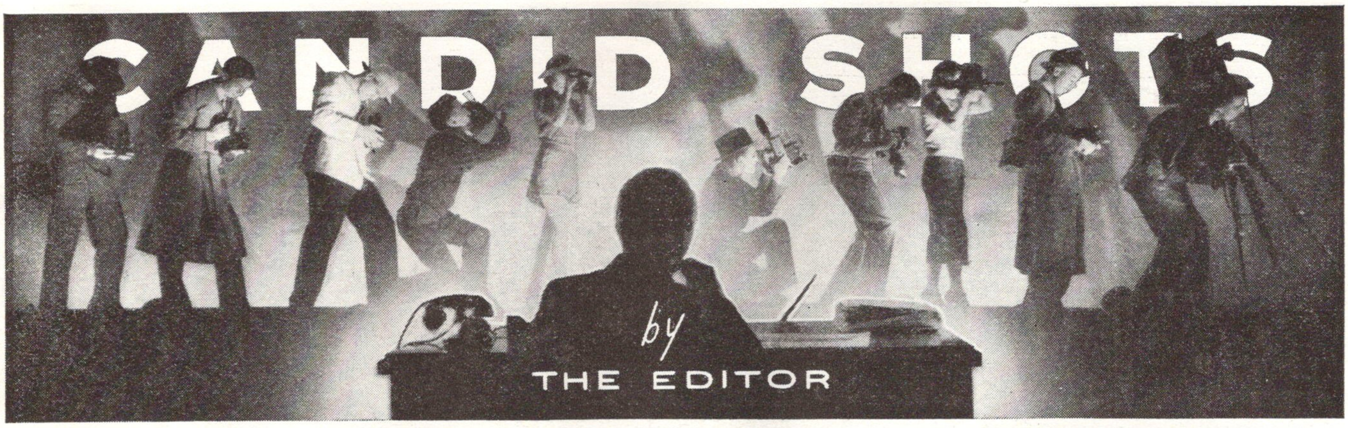


CANDID SHOTS

by THE EDITOR

WE have always maintained that it is just as much, if not more, fun to process your own pictures as to snap them. However, we realize that there are many amateurs who haven't got the inclination, time, space, or money to invest in a darkroom.

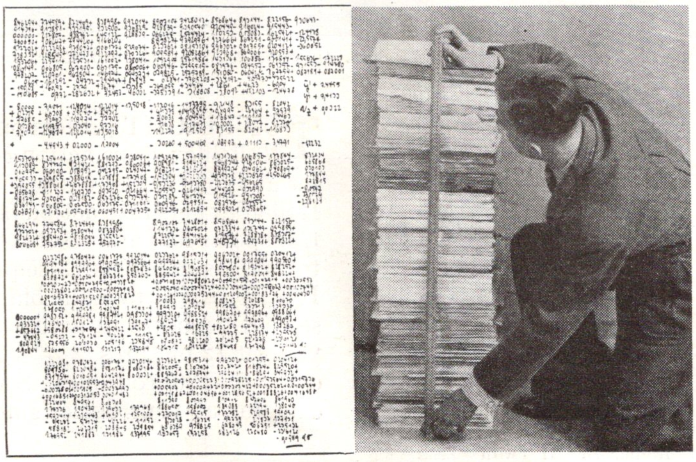
These amateurs place their photographic destinies without reserve in the hands of the photo finisher.

They may have composed beautiful pictures and given them a perfect exposure, yet only too often they get back from the finisher a grainy, scratched and spotty negative and dull, gray pictures that were obviously printed on the wrong paper.

Consequently, we were pleased to see the warning the magazine *Photographic Retailing* has issued to photo finishers. It is their interest that the amateur should get the best possible results from his picture taking or else he may turn in disgust from his hobby.

Of late, the tendency in photo finishing has been to cut prices. Many occasional snapshooters are glad to get prints for the least possible money, regardless of their quality. But there are many serious amateurs who would readily pay higher prices for photos finished if only they could rely on getting a really good job. Here, it seems to us, is an unlimited field for enterprising photo finishers who want to switch from the quantity to the quality field.

AN excellent idea is voiced in a letter from the Lens Club of Bayonne, N. J. It points to the fact that emulsion speeds of printing papers are apt to vary from package to package and that test strips cut from one batch of paper do not show valid results for paper from another package. The club members suggest that the manufacturers supply test strips with every pack of paper. This would eliminate the need of cutting up large sheets of paper for tests and would be more economical for the user even if it would necessitate slightly raising the standard price of packages. As it is, it certainly breaks the heart of many an amateur to cut up an 11 x 14, particularly if he needs only one or two test strips.



The page of figures above is one of the thousands that make up the stack shown which represents the calculations necessary to find the formula for a well-known photographic lens.

ANSWERING a raft of inquiries, here's the latest information on the book *Basic Photography,* published by the U. S. Government Printing Office and mentioned in this column some time ago. The Superintendent of Documents advises us that a new edition of the book was expected to be ready for distribution by the middle of last December. The book is shipped only against advance payment of 65c in cash or money order. This book of 354 pages is certainly an excellent buy.

WITH the advent of television a new field of activity will be opened to cameramen. While television cameramen will not take pictures on film or plates, they will operate cameras based on the same principles as still cameras. And what is more important, it will be their job to pose, frame and shoot pictures which should appear on the screen of television receivers as images of genuine pictorial appeal.

A good photographer, therefore, has one of the most important prerequisites of becoming a television cameraman: he can make pictures. If, beyond that, he is willing and able to master the mechanics of television, he should find the door open to a brilliant career. To get an idea of what the job requires, see what Oliver Read, Technical Associate of *Radio News,* has to say on page 13 of this issue.

CHANCES are that you have already received your copy of the Index to Volumes 2 and 3 of POPULAR PHOTOGRAPHY, covering the entire year 1938. That is, provided you have requested our Index Department to send you a copy. If you are saving your copies of POPULAR PHOTOGRAPHY — as most readers do — you should ask for the Index which we send free of charge to our readers to enable them to make full use of the tremendous amount of photographic information contained in our pages.

THE other day we came across the meanest of tricks one amateur could put over on another. Reader A submitted to us a pretty good snapshot. We paid for it and published it in a recent issue. Whereupon Reader B notified us that he —not Reader A—had taken the picture and had, unsuspectingly, given a print to Reader A who asked for it under the pretext of being delighted by it. Only to turn around and, with a brazenness fortunately rare, take both credit and money for the work of another amateur.

WE have long held the conviction that many a news photographer has the stuff in him to turn out pictures of excellent composition and pictorial beauty. To prove our point, we asked Al Resch of the Associated Press for his cooperation and in this issue you will find some of the pictures he selected to show that news photogs can turn in striking pictures, even though all that is usually expected of them are clear, contrasty record shots.

MANY camera clubs boast quite elaborate bulletins of their own. One of the liveliest among these is *Photolore,* published by the Washington Leica Club. Under the heading *Snapped at 1/1000th,* Robert L. Doty offers interesting observations although it seems to us that 1/1000th is sometimes too high a speed to give an accurate picture.

So for instance when he speaks of a photographic magazine (not *POP PHOTO*) and says ". . . we quarrel with only one thing . . . that they have followed *the* other camera magazines in praising at some length their ad-

(*Continued on page* 93)

Popular Photography

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Including AMATEUR CINEMATOGRAPHY

FEBRUARY
1939

VOLUME 4
Number 2

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An amateur, visiting Hollywood, snapped Spencer Tracy and many other stars. He tells all about his tricks in the March issue.

★

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Color for the AMATEUR

by VICTOR KEPPLER

Author of "The Eighth Art; A Life of Color Photography"

The author, in search of some new angles.

HERE is a digest of a chapter from the famous photographic illustrator's book on color. Directed at the amateur, it treats the subject in a new, general manner that gives a sound basic idea of color composition and lighting for color photography.

Keppler photographed the girl in the circle for Pepsodent.

I AM sure that every one of you has long cherished an ambition to make paper prints in color. Probably some of you have watched a professional making them with one medium or another. If you have dreamed of buying all the expensive equipment he used, and you are waiting for your ship to come in to realize this dream, your waiting is over. That dream can become a reality! An amateur with patience and the ordinary equipment necessary to develop negatives and make black and white prints, can make paper prints in color with very little extra expense. But before a satisfactory print can be made, the transparencies and separation negatives must be perfect.

Do not assume that a set of separation negatives which is not quite right will be corrected in the making of a print. You cannot "get by" in color photography. To make a color print you must begin with as nearly perfect a set of balanced separation negatives as you can make. Not *almost* perfect, but *absolutely flawless.* If you start with that assumption, no matter what process you use you will get a good color print.

As you become more proficient in the technical end of taking color photographs you will also acquire a keener color appreciation. You will notice in things about you colors you were unable to see before. You will find that one color reflects into another color, giving forth colors that are combinations of the color of the object and the color of the reflected light. All these observations enable you to control the color you photograph.

Natural reflections should always be left in. Very often it is wise to exaggerate them, depending entirely upon what you have in mind. Color as well as design must be understood in order to make a perfectly composed photograph.

Color, as you know, is divided into three groups. By three groups I mean the three primary colors—red, yellow, and blue. These three colors can combine, blend, and mix to give you all shades visible to the eye.

If you are an amateur who has just begun to work in color, or even if you have already made color transparencies by Kodachrome, Dufay, or some other method, do not make the mistake of so many beginners, that of using brilliant colors just because you are taking a color photograph. As you go along and gain experience with color, you will find that the loveliest color harmonies are those found in nature. Not that nature does not use brilliant, even flamboyant colors. She does, but think of the centuries of experience she has had in blending them!

You will often be disappointed in your color photographs because you will feel that you did not get what you thought you were taking. My reason for saying "what you thought you were taking" is that the angle of the camera and the angle of the lens do not cover the same area as your eye does in viewing the subject before you. You must accustom yourself to eliminating from your visual area all the excess color that is not within range of your lens. Try to mask out

One of the series of color photographs currently running in national advertising which Keppler made for Lucky Strike cigarettes.

Composition and color blend into a symphony of action in this striking illustration made for a Camel cigarette advertisement.

mentally the excess portions of the picture you are taking and concentrate on the area that will be reproduced.

There have been many rules made to guide the amateur in regard to lighting and color. I do not feel that this is at all necessary. Color photography is a means of self-expression through the medium of a camera, and the operator is the only judge. I would like to make some suggestions, but they apply only to your first few attempts. Keep your color combinations and your color schemes as simple as possible. Do not try to crowd everything into a small area. Remember that a scattering of color gives you a very uninteresting effect. Harmony and contrast, not only of color but of light, are within your scope. When you have achieved what you believe to be a reproduction in color of what you saw, you have done all that can be done with a camera or brush.

You will, no doubt, find it difficult at the beginning to accustom yourself to shooting color pictures. For years, you have unconsciously been translating everything you see into black and white. Here is an entirely new medium. Condition yourself to it.

Both with Kodachrome and with Dufay you will find that a mistake in exposure is fatal. Accuracy of exposure is far more important in color than in monochrome photographs. An underexposed color shot will give a black and muddy transparency in its positive form; overexposure will give a thin and washed-out positive transparency. You can readily see that the fundamental necessity for a good color photograph is a precisely accurate exposure.

There are several types of exposure meters that you can buy which will give you a more accurate light reading than

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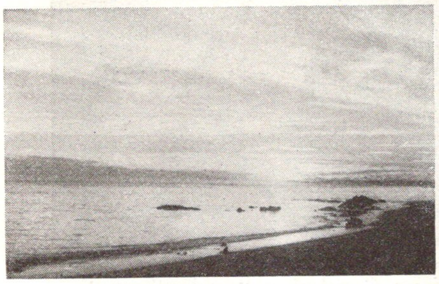
Only masterly handling of light could have produced this lovely study of a nude. A Palmolive soap advertisement used the color photograph.

Turning Sunsets Into Moonlight

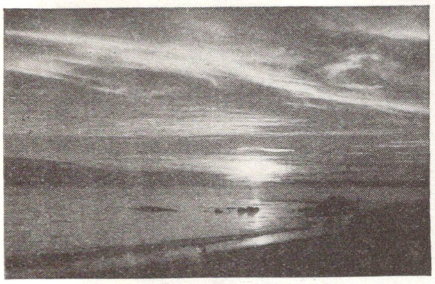
A NUMBER of complications are likely to arise in photographing the moon together with a landscape. As the moon doesn't emit sufficient light to illuminate the landscape, two exposures are necessary; the first a time exposure of the surrounding objects, the second a shot of the moon with the camera remaining in the same fixed position.

Experiments have shown that the sun can be successfully photographed to appear exactly like a full moon. Paradoxically enough, this method is superior to that of photographing natural moonlight, because the sun shows up the landscape and, furthermore, only one exposure is required.



A sunset photographed normally would appear bright with plenty of landscape detail.

First of all, it is necessary to find the sun with a nebulous cloud covering it, either in the early morning or late afternoon. This eliminates the glare that otherwise would blur the picture. As fleecy clouds pass over the sun almost every day in the year, the proper conditions under which to work do not constitute a major problem.



By stopping down and increasing shutter speed you will get a "moonlight" effect.

The second precaution is to use the highest possible shutter speed in snapping the picture. The high shutter speed tends to darken the landscape lighting sufficiently to resemble moonlight, while simultaneously subduing the direct rays of the sun. The value of this scheme is greatly enhanced when the sun is reflected in a lake or stream.

In cases where the sun does not show as a full, round disc, a bit of touching up on the negative will bring out the desired effect perfectly.—

PHOTOGRAPHING SPIDERS' WEBS

by HARRY PEDERSON

THE first spiders' webs I ever saw with the conscious eyes of an acquisitive photographer were hung with dew drops along beautiful Gunflint Trail in northeastern Minnesota. Since I had only a folding Kodak with a lens speed of *f* 7.7 and no tripod, I just stood and looked dumbly at the patterned symmetry of those hanging water pearls trembling in the early morning light. When the rising sun touched them they shot fire like diamonds and evaporated before my eyes. Even the webs became invisible. I walked on wondering if it would ever be possible, without a magnificent piece of luck, to photograph them.

So I tried every time an opportunity presented itself. It would surprise you how far apart those opportunities really are when you are anxious for them to come along.

At the end of three months' time I had four web negatives. Two were underexposed because the light was dim and the air was stirring a little and I had to shoot fast or not at all. One was bright and sharp, but no good as to composition because I shot the first one I found. The one that looked so dazzling with the sun on it was so far gone with halation that those beautiful drops looked like knots in grocery cord.

And so it went, until finally I decided that spiders' webs were much more beautiful on trees and bushes than on film. But I still was determined to get pictures.

The answer to the problem, when solved, was very easy indeed, as is the case with most knotty problems. I picked up the spider's web and carried it gently into my workshop. Lights and backgrounds were arranged and there was no wind to worry me. You might think at first that carrying a spider's web around would be in a class with wrapping up a yard of milk, but there is really nothing difficult about it.

The web should be small. Small webs are built exactly like big ones, except that the web strands are finer and more closely woven. Suppose we say, then, a web two or three inches in diameter. You will have to go web hunting when the dew is on, otherwise you will not be able to see them. When you come across one of a design that pleases you, one that is entirely contained on some twig-end or weed stalk, without guy strands fastening it to something else, tie a piece of cloth around the twig so that you can find it again and go hunt some more webs. If you were to try to cut off the branch when the web was laden with dew, the weight of the drops combined with the jiggling would break it down. So make your web selection and then wait until the dew is off. Then you may cut off the branches or weeds and transport the webs wherever you please.

Set them up on a convenient table. Cans of good thick mud do about as well as anything for holding such branches. Now, a good black background, something without design, and a couple of photofloods. I use one almost directly above the web and another one out to the front and a little to the right. Since you are dealing with a small web you must have a camera that will focus at a distance of not more than a foot in order

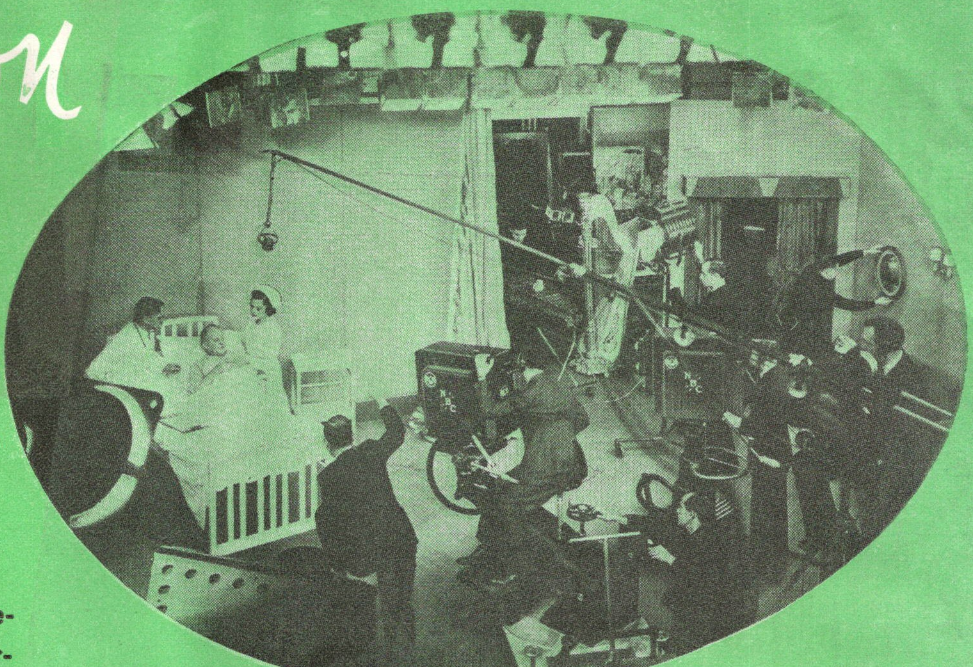
(*Continued on page* 75)

Brought into the studio from outside, the web was sprayed and then photographed.

The web was "posed" against a black background and illuminated with two photofloods in reflectors.

Television Needs Cameramen

With the advent of television a new field will open for enterprising cameramen. The profession's requirements are set forth here.



A scene in the NBC television studio during a demonstration before the Society of Motion Picture Engineers shows the telecameramen at their television cameras.

by OLIVER READ

Technical Associate, "Radio News"

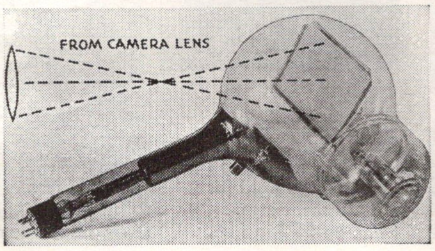
THE remarkable resemblance of television to photography is apparent to most of us. The resemblance, however, goes even deeper than appears on the surface, particularly in regard to the cameramen who operate television cameras. Since the advent of television is not far in the future, a glance at the requirements for television cameramen seems in order. Particularly so, because many telecameramen will undoubtedly be drawn from the ranks of photographers.

A sound knowledge of photography, an accurate sense for composition, masterly handling, and a keen mind are fundamental. To these requirements, however, must be added a complete mastery of elementary physics and a working acquaintance with the theories of radio and electronics.

The cameraman who would enter television must be a past master at working rapidly with large, bulky cameras under all conditions. Practical experience as a motion picture cameraman, particularly in newsreel work, will be invaluable.

He must be thoroughly grounded in the fundamentals of radio-physics, electronic theory, and television principles, so he may know how his camera functions, and how to meet any technical difficulties which may arise. A knowledge of the effects of electron optics and light on his television "eye" is an absolute necessity.

Below is an Iconoscope, the electric eye of the television camera. It converts light impulses into electrical impulses which are amplified and then broadcast.



That is the general education that the cameraman who would enter the television field must have.

A brief discussion of the type of work which will be done, and the apparatus used is not amiss.

We have been hearing for years that television is "just around the corner." That corner happens to be the New York World's Fair. With the opening of the exposition, it is planned to have regular telecasts over the New York NBC and CBS stations. Some of these programs will be "live" and some will be from motion picture film. Undoubtedly the ratio will be in greater proportion on the "live" side, if the rulings of the Federal Communications Commission (the Washington body charged with the control of all radio) are any indication.

"Live" programs are telecast from a studio much the same as that used by motion picture firms, except that more than four times the light needed to shoot technicolor is used with television. Since technicolor requires more than twice the amount of light that is used with ordinary black-and-white photography, the amount of light that will be used will be terrific. This means that there will be hot spots under which to operate, and short-tempered people to televise. A good physical constitution for the prospective telecameraman is therefore indicated.

The actual telecasting is done with a large, bulky "telecamera" which is equipped with an ƒ 2.8 or ƒ 3.5 lens. Inside of this camera instead of the photographic film, there is a square metal plate, or "target." This plate is not out in the open, but enclosed in the end of a highly polished radio tube called an "iconoscope." The image to be telecast is focused on this plate, and viewed continuously on a groundglass by the telecameraman, aided by a system of mirrors and another series of lenses.

In the neck of the iconoscope is an ap-

(*Continued on page 80*)

Above is a photograph of Betty Goodwin, NBC television hostess; below, the way she appears in the television receiver.

Effective

by

DONALD J. MOHLER

Amateur Photographer, Cleveland, Ohio

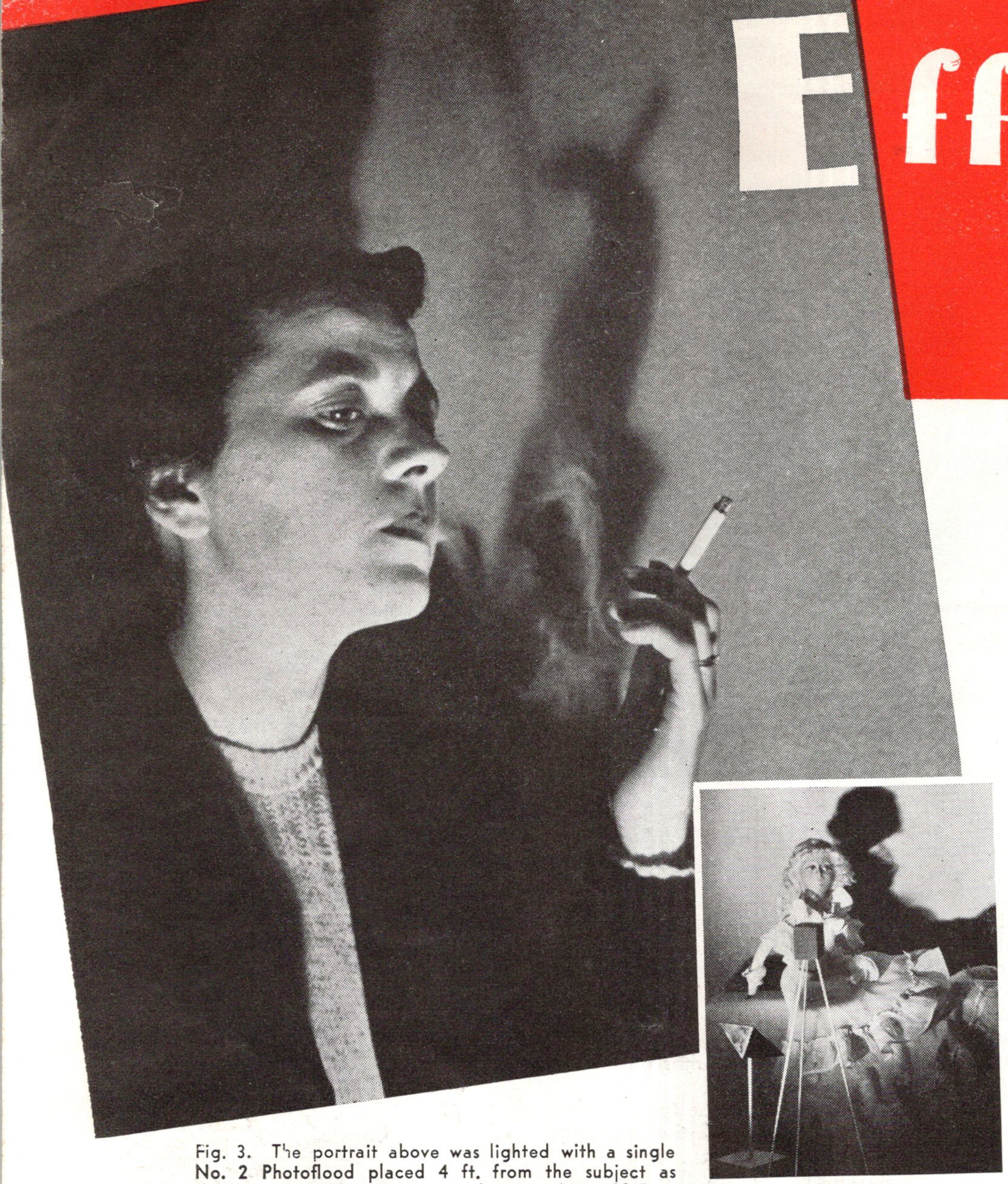


Fig. 3. The portrait above was lighted with a single No. 2 Photoflood placed 4 ft. from the subject as shown at the right. Exposure, 1/25 sec., *f* 4.5, SS Pan.

WHEN the amateur photographer turns his attention to portraiture, one of the most important problems that confronts him is the proper control of lighting. Without a sound, basic understanding of the subject he is bound to founder in a welter of errors and will undoubtedly have only mediocre results to reward him for his earnest effort.

Like more important things, the first step toward successful light control is to learn simplicity. Right here, at the beginning, many amateur photographers go wrong. The photographer who can exhaust all the possibilities of even two light sources is yet to be born. However, the average amateur is prone to believe he needs a battery of high-powered floods, spotlights, diffusers, and reflectors to give him effects approaching the professional.

An examination of most photographic studios will reveal a medium-sized room containing a camera and five or six simple lighting units. That is all. Many pictures are made with only two or three of the units. If one can make a living and a reputation as a competent photographer with such simple tools, the amateur can forego the ambition to own enough lights to equip a Hollywood studio. Simplicity, usually, is the keynote of success.

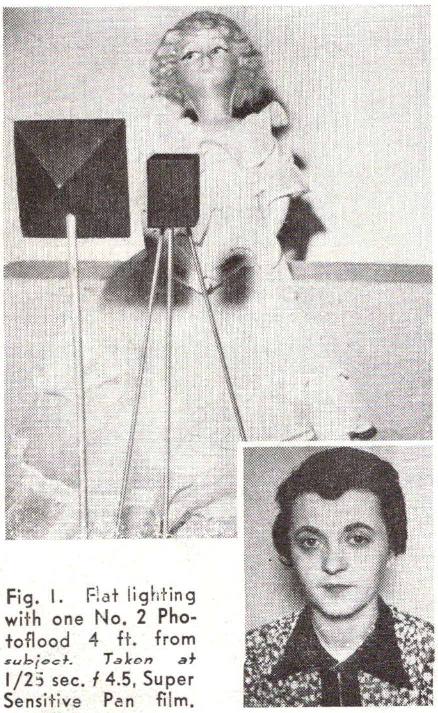


Fig. 1. Flat lighting with one No. 2 Photoflood 4 ft. from subject. Taken at 1/25 sec. *f* 4.5, Super Sensitive Pan film.

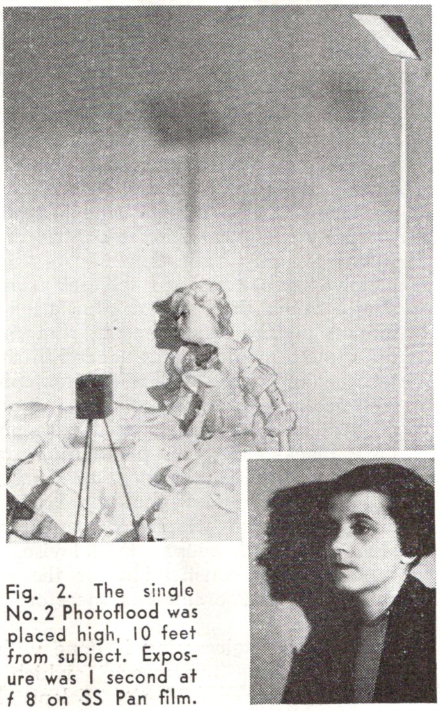


Fig. 2. The single No. 2 Photoflood was placed high, 10 feet from subject. Exposure was 1 second at *f* 8 on SS Pan film.

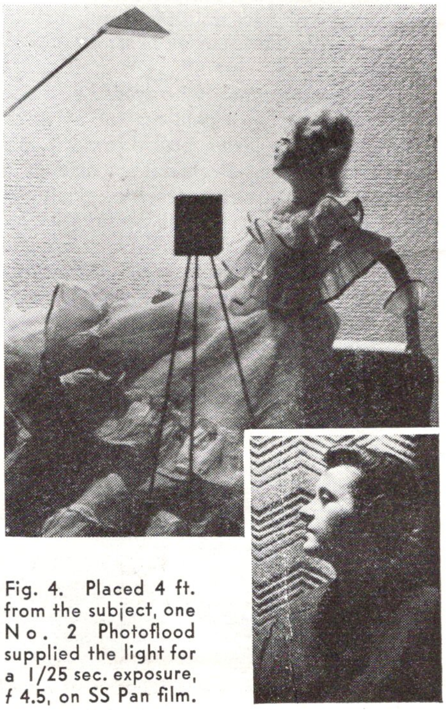


Fig. 4. Placed 4 ft. from the subject, one No. 2 Photoflood supplied the light for a 1/25 sec. exposure, *f* 4.5, on SS Pan film.

Portrait Lighting

Simplicity is the keynote of successful lighting. Learn to use one or two lights well, rather than many lights ineffectively.

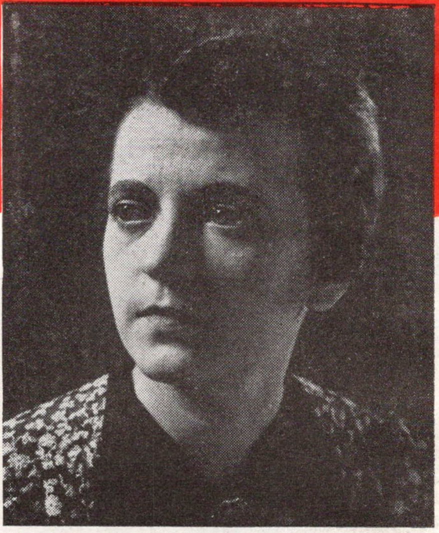
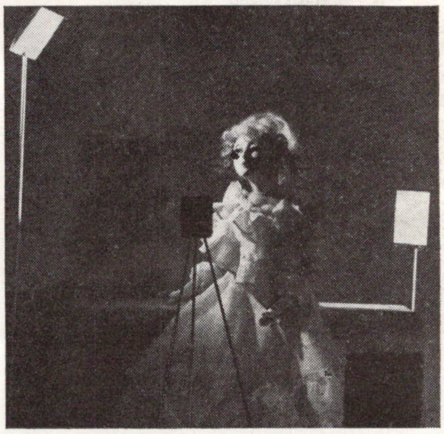


Fig. 8. Exposed at 1/25 sec. at *f* 4.5 on SS Pan film, the above portrait was made with the lighting arrangement below.



The photographs which illustrate this article were made with only one or two No. 2 Photoflood lamps in simple reflectors. No diffusers of any sort were used. They are straight prints from the original negatives without having been retouched or altered in any way. The subject is the same in all the pictures. Exposure is normal in every case. The only thing that is changed is the *lighting*. Notice how some pictures flatter the subject more than others. Note that in some the face appears narrow, in others round, and that the lighting sometimes makes the subject appear much heavier.

In order to show the position of lights, camera, and subject, small wooden models are used to represent light sources and camera. A French doll takes the place of the subject.

Ridiculous as it may sound at first, you can stick to the ultimate simplicity of a *single* light source and produce a wide variety of satisfactory portraits. The sort of thing most often seen, when one light source is used is shown in Fig. 1. Here the photoflood is right beside the camera. This gives a straightforward presentation of the subject exactly as it is. Such a picture usually lacks roundness. However, newspaper photographers use this lighting almost exclusively because of its ease of handling, and because the *picture* is the important thing, not the lighting. It is ideal for record photography where no distinct lighting effects are desired. It is a flat lighting, recommended for simple Kodachrome shots where the resulting picture has color contrasts not available in black-and-white photography. It is good for quick pictures of children and pets, where posing is out of the question, and stopping the action is what matters most. This is only a starting point.

Let's move the single light high and to one side, and pose the subject against a light background. The result is shown in Fig. 2. This arrangement projects the profile in silhouette and renders a three-quarter view of the face. The light background serves to bounce some of the light back into the shadowed side of the face so that detail shows in all of the features. It also lights the line of the cheek on the shadowed side of the face and separates it distinctly from the dark part of the background.

Now move the subject closer to the background and try a shot with the light on the floor, shining upward (Fig. 3). Such lighting produces a moody, fireside effect, suited to nearly any subject.

Only one light source is also used in Fig. 4. This time it is almost directly overhead. Again the subject is rather

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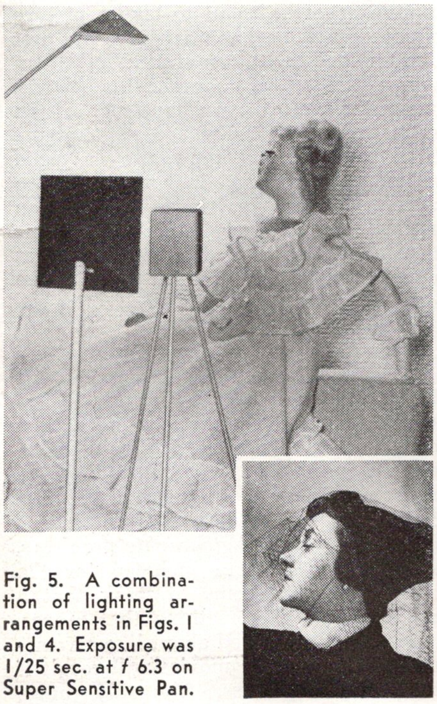


Fig. 5. A combination of lighting arrangements in Figs. 1 and 4. Exposure was 1/25 sec. at *f* 6.3 on Super Sensitive Pan.

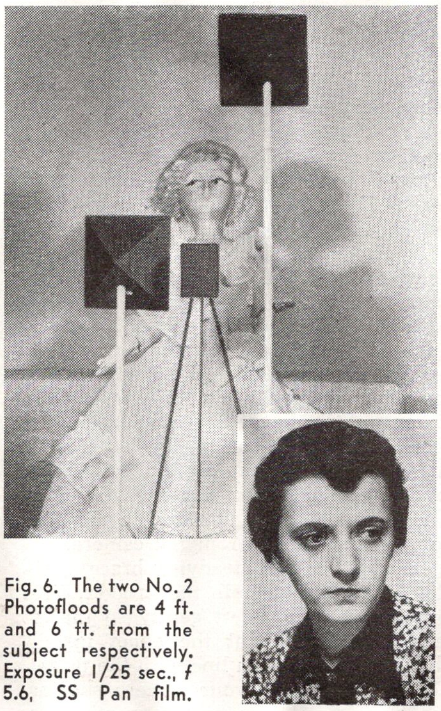


Fig. 6. The two No. 2 Photofloods are 4 ft. and 6 ft. from the subject respectively. Exposure 1/25 sec., *f* 5.6, SS Pan film.

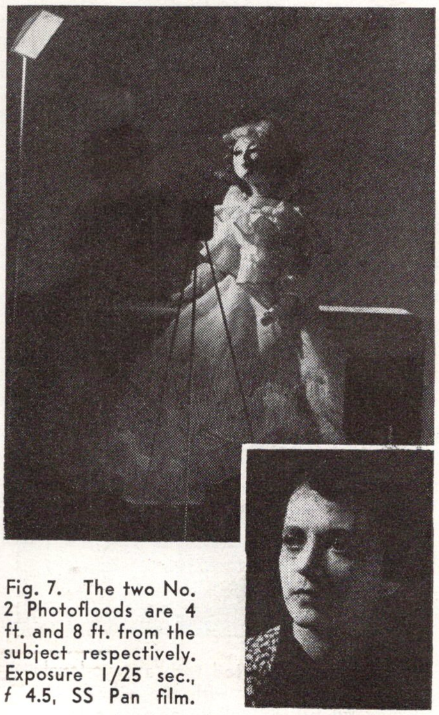
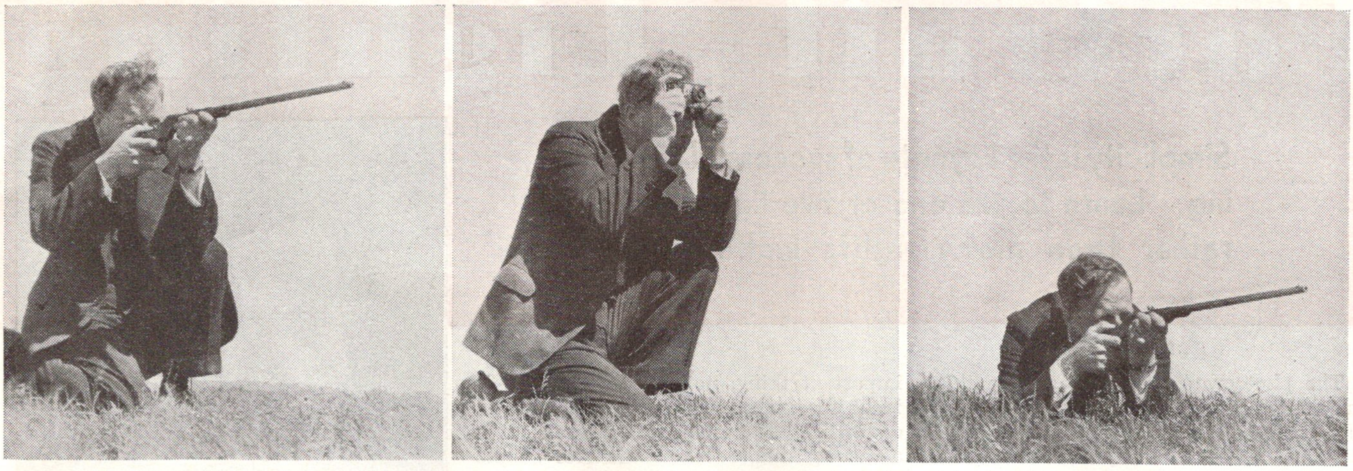
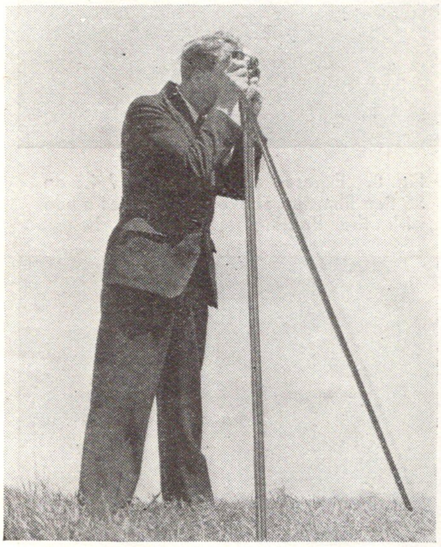


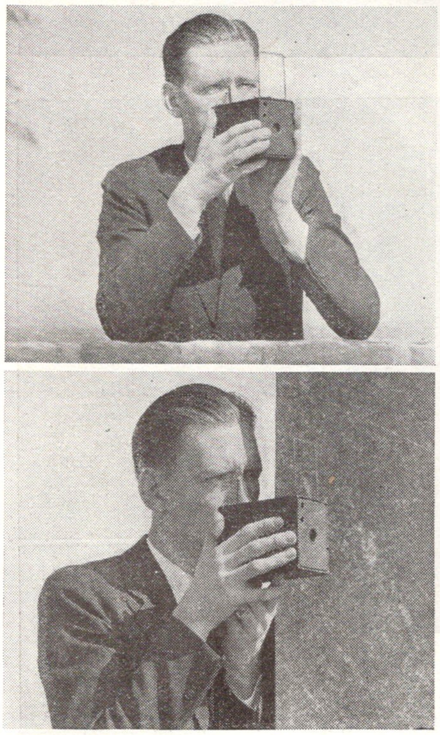
Fig. 7. The two No. 2 Photofloods are 4 ft. and 8 ft. from the subject respectively. Exposure 1/25 sec., *f* 4.5, SS Pan film.



The rifleman's elbow-support position, shown at the left, may also be used with the camera (center). The prone position for the rifleman is illustrated at the right.



Two long sticks will form a rigid support when you are making long exposures.



The box camera, fitted with an eye-level finder is supported with the elbows or it may be braced solidly against a tree.

Steady—Shoot!

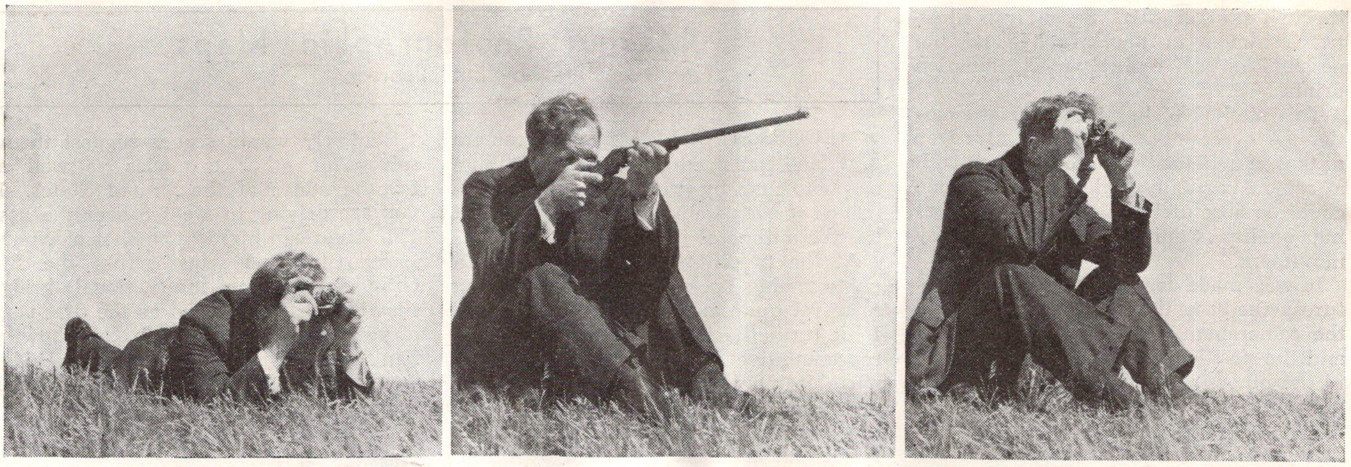
THE slightest movement of a camera *during exposure* (even a fast exposure) will kill the finest definition of the sharpest cutting lens in the highest priced camera. The smaller the film the greater the need for absolute lack of motion. Excluding the users of the extremely fast and expensive lenses, there are many occasions when the average amateur will require an exposure longer than the conventional snapshot of 1/50 or 1/25 second. Dull days, shaded spots, windy mountain tops, dull interiors, dark subjects, and night scenes all offer picture-taking possibilities for box cameras, small folding cameras, and miniature cameras with medium-speed lenses, if sufficient exposure is made with the camera motionless.

By way of comparison, rifle shooting is similar in many respects to camera shooting. The principles are much the same and, in case your rifle shooting experience is limited, some of the more common positions are illustrated with corresponding positions for holding a camera. Target rifles have a strap under the stock into which the marksman hitches his elbow to give him a bracing counterpull. A similar idea in camera work is the short neckstrap attached to the bottom of a short leg from the camera.

In addition to a steadying brace, a rifleman does not pull the trigger. He presses or squeezes it gently so that it *trips motionlessly* at the exact instant that the sights are in line with the target. Do the same with your camera shutter, while holding your camera motionless, and you will get a greater precentage of useable, enlargeable shots. The other illustrations may serve to bring to mind one of the several ideas they suggest at a time when it may be very useful.

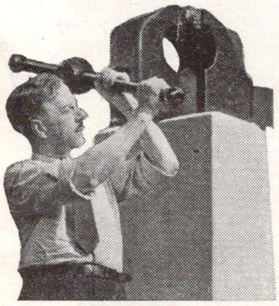
Scientific photographers, expert movie, news, and still photographers know all about solid, motionless cameras. The next time you see a *successful* miniature camera operator about to take a picture notice that, if he has no tripod, the first thing he does is to look around for a firm support on which to brace his elbows. Recall the pictures you have seen of the outfits used by Hollywood cameramen. Their cameras, you know, use the same 35 mm film you load in your miniature camera. The heavy tripods mounted on trucks seem almost solid enough for mooring a Zeppelin. The point is that men who make pictures for a living see to it that their cameras are as motionless as a rock.

Ultra-fast lenses, speedy shutters, and fast film tend to give the impression that the camera itself need no longer be motionless, but "fast" materials and equipment merely reduce the risk by shortening the period of time during which movement may affect the image. The risk is still there! *Speed is by no means the answer to all photographic problems.* A suggestion is here included for the movie fan who seems to think that a movie camera is something that *moves,* or that may be moved about like a vacuum cleaner. Better movies will result if it is held motionless. The only things about a movie camera which should move



The rifleman's prone position can be used to get a low camera angle, as at the left. **When seated, brace the elbows against the knees as shown in the center and at right.**

The author would barely trust this tripod substitute.



by ORVILLE YOUNG

ONE of the first requirements for good pictures is that your camera be held absolutely motionless. A great variety of ways in which your camera can be steadied is illustrated and described in this helpful article.

are the film and the operating mechanism *inside the camera.* Let the subject do the moving. A movie camera merely makes a series of *still* pictures in rapid succession, which, when projected at a rate of speed faster than the eye can perceive, give the *effect* or *impression* of motion.

Just because a camera *may* be held in the hand is no reason why it should not be placed on a firm support and given the same chance as its bigger brothers. I always remember a remark someone made that, "there is still no law against using a tripod."

An idea which is sometimes used to hold the tripod itself steady in a windy spot, is to suspend a brick, stone, or other heavy weight from the center of it to give a low center of gravity.

If you do not have a tripod, do not make a practice of carrying one, or if you do not like them, you can still employ the tripod principle by bracing your elbows on some convenient support as in rifle shooting, or by using one of the other methods illustrated. You can fit any kind of a handle, strap, or gadget to the tripod screw socket of your camera very easily. There is nothing special about a tripod screw. A ¼″ stove bolt with a standard thread is all there is to it. They come in various lengths and are inexpensive.

If, on some occasion, you have nothing but a rope or strap handy, it can be very useful. Grasp it by the middle with the camera hand, raise it to the desired height and hold the two ends firmly on the ground with the feet. Pulling up tight against it will give surprising steadiness.

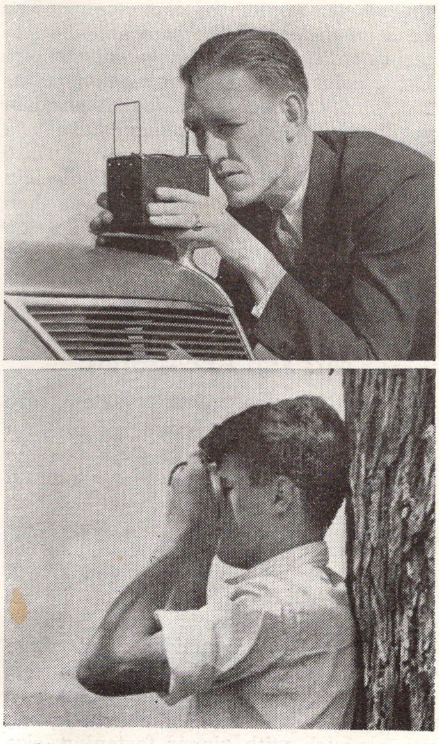
Box cameras and light, folding cameras fitted with small reflex finders, and which must be held low to enable you to look down into them, can be very easily adapted to eye-level use. To determine the area covered by the lens, place a piece of groundglass, or oiled paper, in the position normally occupied by the film. Set the shutter for time and at its largest opening. Bend a rectangular frame of wire to be attached to the front of the camera at either the top or side. Bend this to a size which will outline the view seen on the groundglass. Your eye should be close to the back of the camera when checking this outline.

Next make an eyepiece loop by bending a piece of wire around a lead pencil and twist the wire to form an upright just high enough to have the loop line up with the center of the rectangle. Fasten these two pieces to the camera with tape.

The reflex finders are not altogether useless. You can use them for right angle shooting. With the lens pointed to one side you can sometimes get a "candid" shot while you are apparently looking forward. Finders of the eye-level type which can be attached to any camera are obtainable at almost any photographic supply store. Anything of this kind which will serve the purpose is highly recommended.

The humorous illustration showing a tripod substitute serves a double purpose. It first aims at deeply impressing an idea

When shooting with a light tripod, it is well to press it firmly into the ground.



The camera may be supported at many places on your car. Pressing the back of your head against a tree or wall will help.

through exaggeration. Secondly it illustrates humor in photography and the possibilities of creative combination prints.

This method of holding a camera motionless is certainly exaggerated. But even at that, if a picture were to be taken with a camera actually held like this, one could be absolutely sure that its enlarging quality would not be spoiled by movement.

It was made from four separate pictures: the base, the vise, the camera, and the cameraman. The angle of the light and the position of each part in relation to the others were as nearly as possible alike in each of the four pictures.

The picture of the base was made first. It is part of a monument on which rested the bronze bust of a man. This base was used in its original setting, eliminated while making the outlined halftone. The picture of the vise was next, the jaws being opened twice as wide as would normally be necessary to hold the type of camera shown. This was done to retain the relative exaggerated proportions. The camera was then tightened in the vise (with cork on each side) and a picture made of that. Then a picture of the cameraman was made. A big stick was held in the hands. The knobs of the vise handle were pasted on this later.

The negatives were 2¼x3¼. An 8x10 enlargement of the base and background were first made. While this image was still focussed on the easel, a sheet of plain white writing paper was inserted in the holder and the outlines of the picture traced on it in heavy black crayon. This tracing was left on the easel and the negative of the vise was focussed to fit the space it was to occupy. The tracing was then replaced with bromide paper and a print made. The same procedure was followed in making prints of the camera and of the cameraman. The head on the top of the base and the lettering on the side of it were painted out. Using print No. 1 as a foundation, prints 2, 3, and 4 were cut out and secured in position with rubber cement. Then a copy negative was made on an 8x10 camera and lightly retouched on the join marks. An 8x10 contact print was then made on glossy paper. The result was a cartoon which, once seen, should impress its idea so deeply that it will last for years to come.—

Kits for Accessories

FILTERS, exposure meters, etc., are best carried in a box or pouch in a coat pocket. In fishing-tackle stores one may buy, for 50 cents, a sturdy aluminum box 4 x 8 x 1½", cover hinged, fitting friction-tight, and with four compartments, two or all to be removed if not wanted. One of these boxes will take a 4 x 5 filmpack or several rolls of film, an exposure meter, two or three filters, a cable release, and pencil and pad. Line the box, bottom and cover, with soft leather or felt, cemented in, to prevent rattling of contents. For a smaller kit, use a pouch with zipper fastening, size about 3 x 6 inches.—*Perry D. Frazer, Ridgewood, N. J.*

Making Photographic Maps

by Emil Pearson

GEOGRAPHICALLY minded camera fans can make an attractive album or photo-map by printing representative scenes of each state through a mask that has the outline of the state.

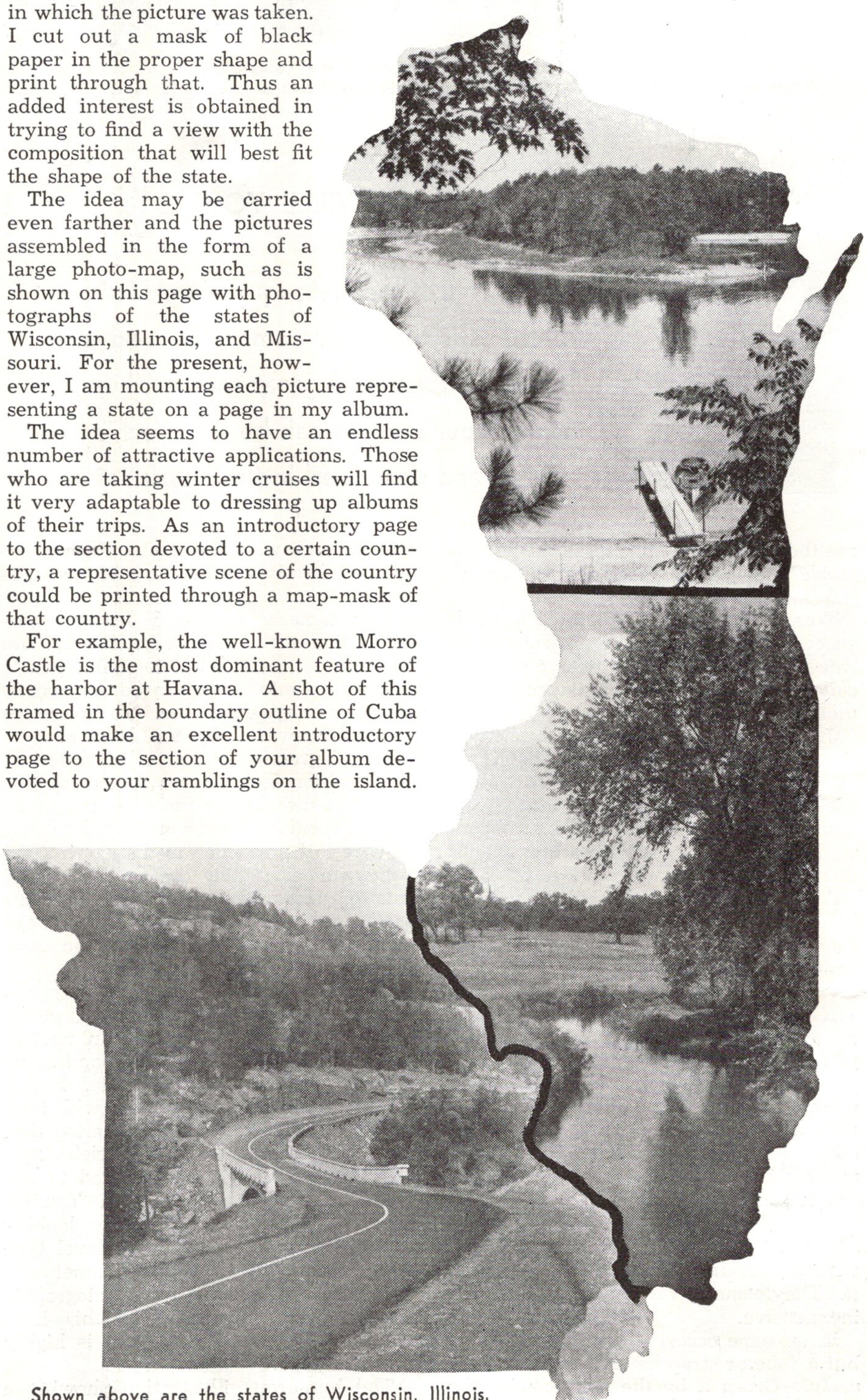
At the present time I am making a photographic book of states. Expecting to travel quite extensively in the future, I hit upon the idea of taking a picture representative of each state entered. To make it more realistic, each picture is printed in the form of a map of the state in which the picture was taken. I cut out a mask of black paper in the proper shape and print through that. Thus an added interest is obtained in trying to find a view with the composition that will best fit the shape of the state.

The idea may be carried even farther and the pictures assembled in the form of a large photo-map, such as is shown on this page with photographs of the states of Wisconsin, Illinois, and Missouri. For the present, however, I am mounting each picture representing a state on a page in my album.

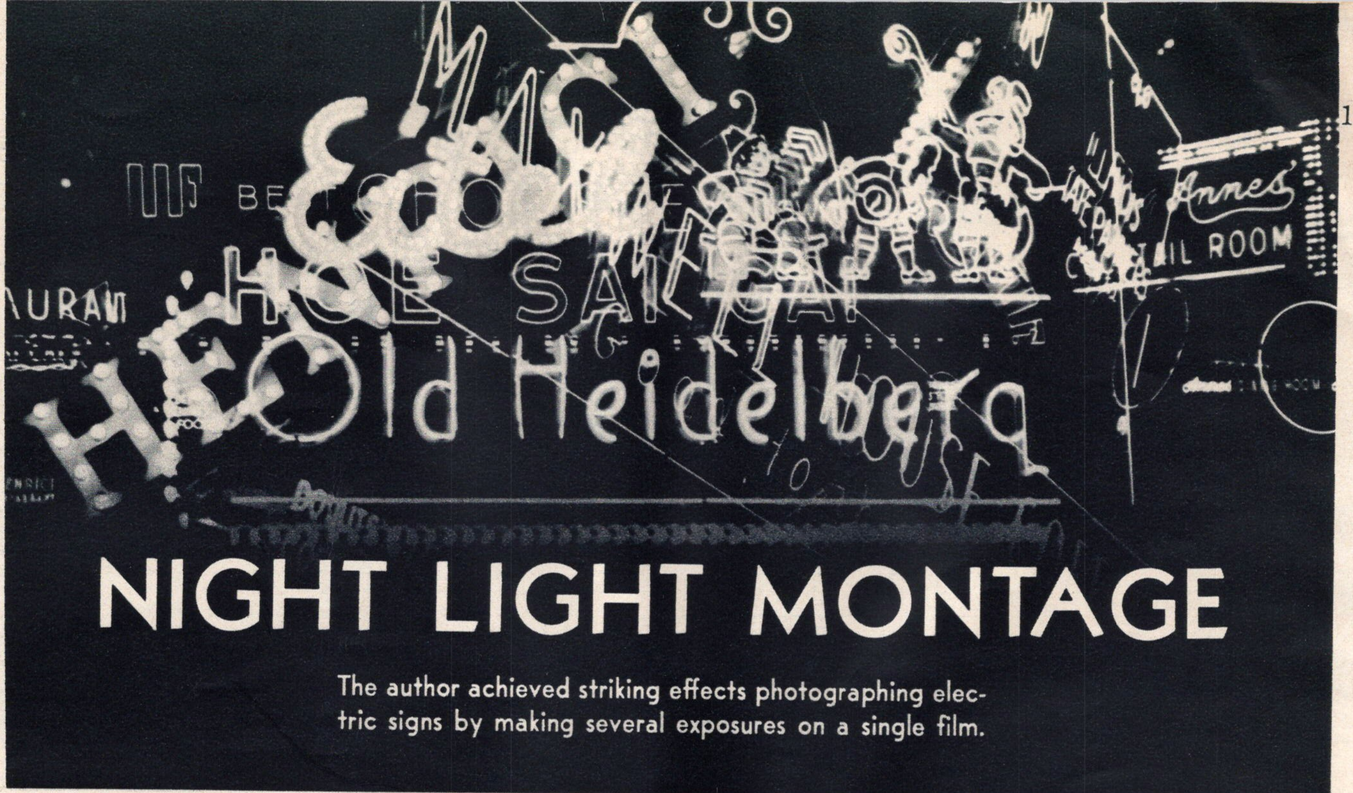
The idea seems to have an endless number of attractive applications. Those who are taking winter cruises will find it very adaptable to dressing up albums of their trips. As an introductory page to the section devoted to a certain country, a representative scene of the country could be printed through a map-mask of that country.

For example, the well-known Morro Castle is the most dominant feature of the harbor at Havana. A shot of this framed in the boundary outline of Cuba would make an excellent introductory page to the section of your album devoted to your ramblings on the island.

Similarly would scenes suggest themselves for other countries as well as for the states of the United States. If you are driving to Mexico over the new Pan American highway, a shot of Nuevo Laredo taken looking across the Rio Grande with the international bridge showing would be ideal as the first page of your picture record. A shot showing San Francisco and the famous new bridge would depict California. Subjects will suggest themselves endlessly.—



Shown above are the states of Wisconsin, Illinois, and Missouri. The author composed a scene taken in each state within a mask of the boundary outline.



NIGHT LIGHT MONTAGE

The author achieved striking effects photographing electric signs by making several exposures on a single film.

by

MAURICE BAER COOK

Amateur Photographer, Chicago, Ill.

FLASHING electric signs have always intrigued me with their photographic possibilities. Like most photographers, I have taken innumerable "straight" shots of them, and have always been on the lookout for odd arrangements. But while the store owners and advertisers are obliging enough to hang interesting signs in public places, they stop short at arranging them in intricate compositions for the benefit of photographers. Thus, for a long while I had to content myself with such chance compositions as I happened to find.

One evening, however, a brilliant thought struck me! Why not try an experiment in multiple-exposure? If the background detail and over-exposure fog could be kept down, it might be possible to build up interesting designs.

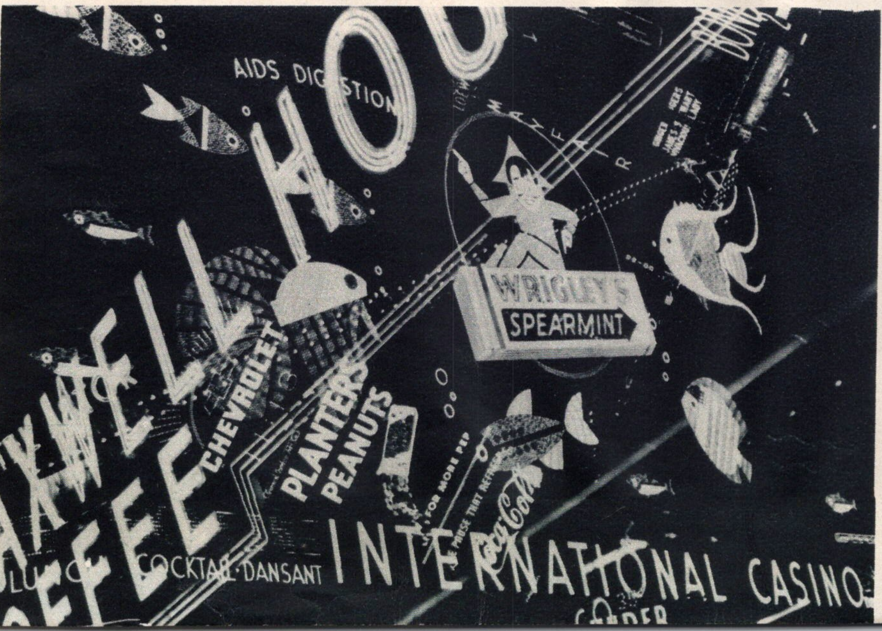
In a very fever of activity, then, I dashed up and down the streets, banging away at night club signs, beer signs, hotel entrances, and anything else that looked good. I hadn't shot many negatives before I found that composing in the finder, and trying to remember what else was on the film was not easy. But it was great fun and I felt all the thrill of a discoverer of a new art. Here was "painting with light" with a vengeance! The possibilities were only limited by my ability as a composer.

After the first flush of excitement was over, I decided to work out one super-composition to top off the night's work. Heading for "downtown," I finally ended up on Randolph Street, Chicago's Rialto. Here was enough material to satisfy anyone. I had worked this district to death before, but now it had a new significance. I carefully composed the first sign in the finder, and shot it at 1/10 second at ƒ4 on a finegrain panchromatic film.

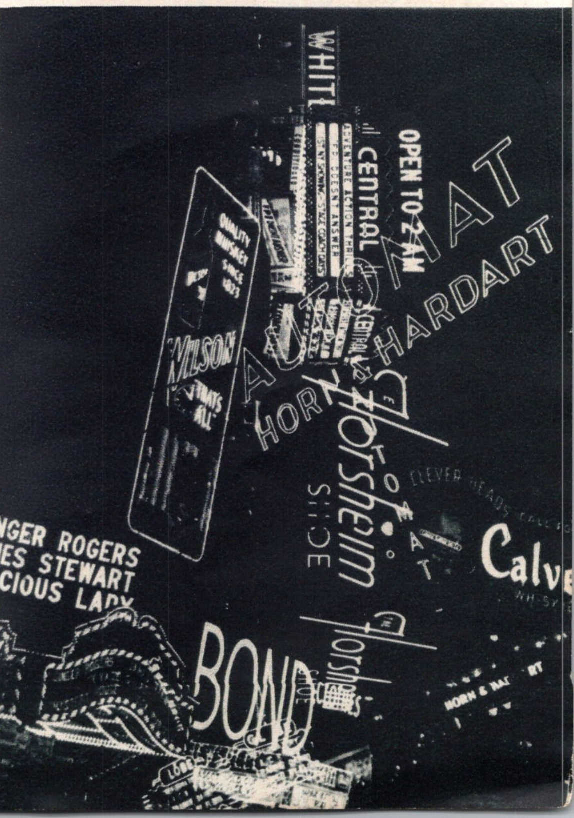
Now for the system. On a page of my notebook I drew a rectangle representing the 35 mm frame, and roughly sketched in the shot I had just made. Then I looked for the next sign, and, referring to my sketch, decided where to put it on the film. This *was* a real thrill and I definitely knew I had something. In all, I made nine or ten exposures on that long-suffering piece of emulsion. This pretty well filled up my record sketch, so I dashed back to the darkroom to process the film. And then, *eureka!* I had it! The negative was clean, sharp, and clear cut. It was a pleasure to see how the signs seemed carved into the emulsion.

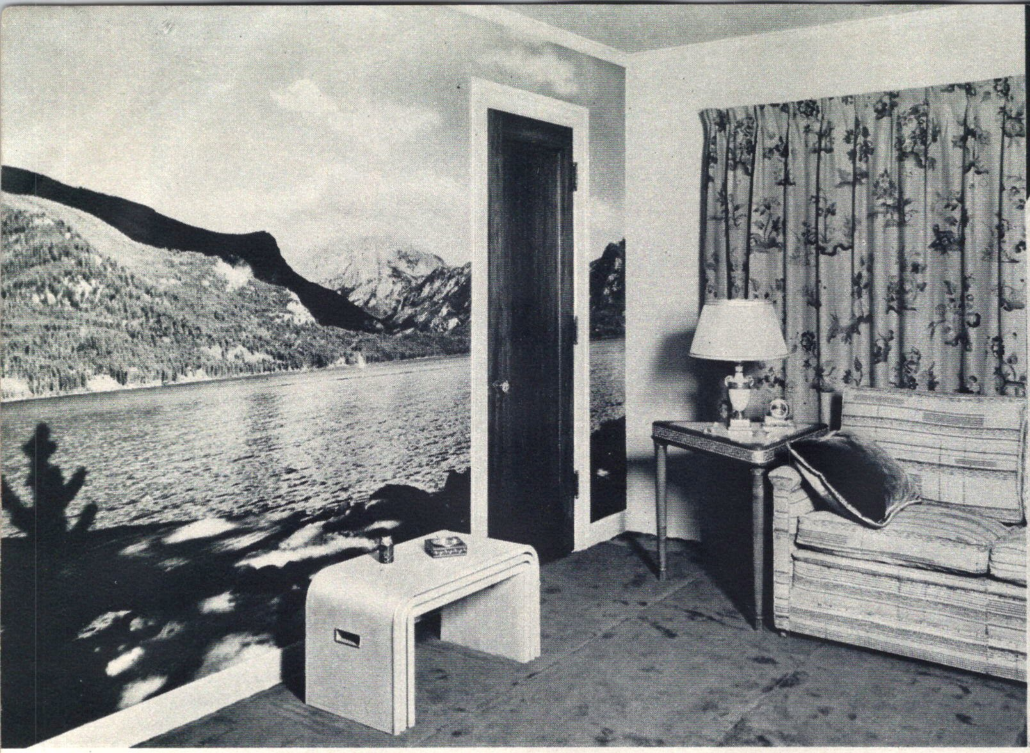
Almost any business street has enough signs to make an interesting composition. New York is especially fortunate in having Times Square. I spent a whole evening there last summer, just banging away at the signs in that district. I believe other photographers will find, as I do, that there is a lot of fun to be had in composing night lights.—■

Nine exposures were made on one negative to produce this montage of electric signs in Times Square, New York City. Exposures were 1/10 second ƒ 4, on Du Pont Parpan film.

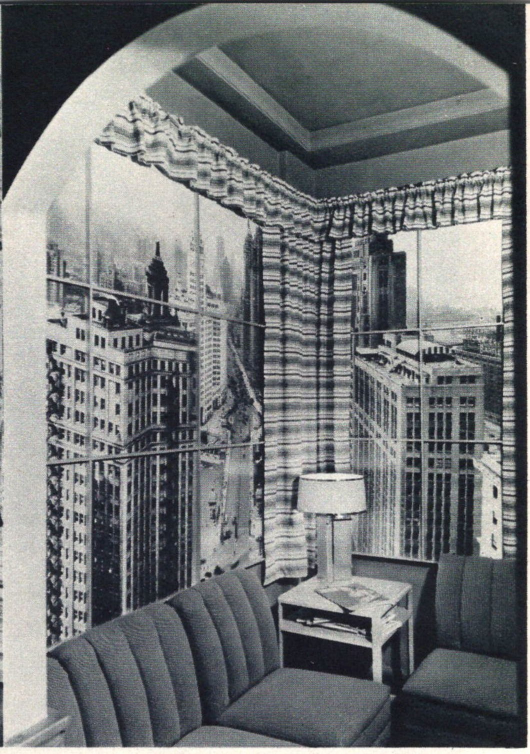


This multiple exposure montage was made at 42nd St. and Broadway, New York City.



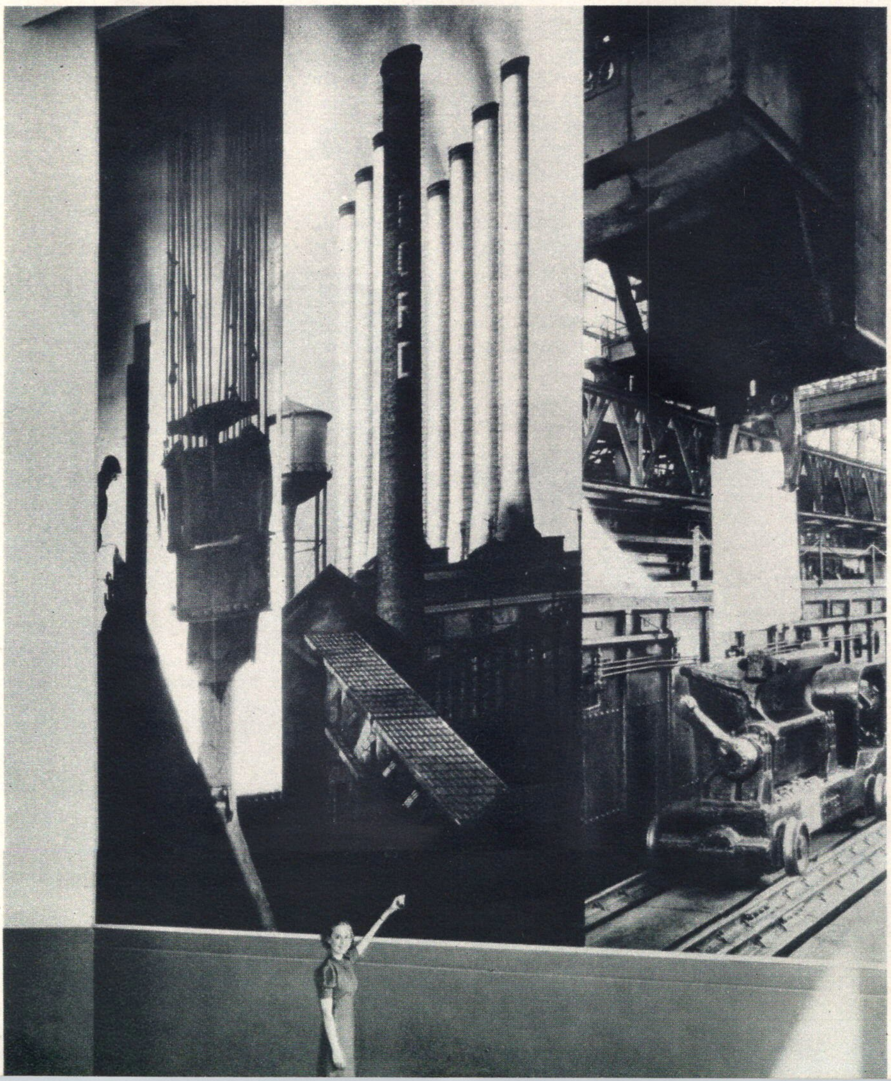


The primary decorative motif in this room is the large photomural which covers all of one wall. A snapshot of the owner's vacation lake supplied the negative for the mural.



Seemingly a corner window, this is actually a photomural of Chicago's Michigan Avenue.

How Photomurals



One of the greatest enlargements ever made is the central panel of the Ford Motor Company's exhibit in Miami, Fla. The girl is holding the negative of the huge photomural.

by ARTHUR E. CLASON

Photographic Engineer, Kaufmann & Fabry Co.

Though photomurals are mostly custom jobs for large studios, the amateur can also make them with little extra equipment.

THE photomural, scarcely 12 years old, is a "frontier in photography" whose boundaries have been so far barely penetrated. It has opened up new worlds to nearly everyone — those who take pictures and those who like pictures.

The technique of photomural production changes almost daily, and no two producers can follow exactly the same steps because of differences in their equipment. In this article, an attempt will be made to present certain general principles and as much specific information as practical for the guidance of the amateur who wants to try to make a photomural. Data presented here have been gained from years of experience in photomural production. Not all these facts may fit the requirements of a specific job and the amateur may discover much better ways of solving his own problem. In other words, this article should not be considered as a "blue print."

First, a few general observations to serve as possible anchor posts for fur-

Are Made

ther discussion on phases of the subject.

Every photomural, regardless of its size, is a highly specialized creation. Making one requires intense creative effort. This, however, should not discourage the amateur from trying his hand.

The factor of size is incidental. Photomurals may cover a small area or hundreds of square feet. Generally, they are "large" only in the sense that they are bigger than average photographic prints, usually have to be mounted in two or more sections and, of course, demand special equipment. The mere size factor of photomurals, leaving out the gigantic Ford Motor Company installation which is 600 feet long and twenty feet high, and other true "giants" in the field, should not frighten you.

Mechanically, every photographer is limited by the physical possibilities of his equipment. This is just as true of the professional who has special photomural apparatus as it is of the amateur with ordinary tools. How big a photomural can you make? The answer to this, of course, depends on your enlarger and the facilities you may contrive for handling large prints.

Real photomurals are not merely enlarged photographs pasted on a wall! They incorporate many of the principles of mural art as well as principles of photography. It might be a good idea to let this suggestion soak in. No one in the field, no matter how big his equipment, has any "corner" on good photomural art. Study murals in general. They are fascinating.

Murals are one of the first forms of aesthetic expression the human race developed. Our prehistoric predecessors scratched them on their caves. And some of these ancient murals are much better than some modern man is doing today!

Generally speaking, the subject matter is unlimited. Anything that can be photographed can be depicted in the form of a photomural. But such liberty is not always justified! The photomural, to be really satisfying, should fit its interior. If this cannot be done, then remodel the interior to fit your photomural. In any case make them both fit!

Don't get the idea that photomurals are confined to pictures of landscapes, blown-up candid shots, or any of the usual photographic material. Photographic reproductions of engravings and similar material, tapestries, paintings, drawings, and other subjects may be just what you need.

Some artists in paint and canvas are very much worried about the development of the photomural. They seem to feel it is going to drive them out of business. The idea is ridiculous for the true mural artist with pigment and brush can do things that no camera will ever do. This much is true, however; an artist's small, original sketch, can be photographed, enlarged, printed on photographic paper, and then mounted on the wall instead of having the artist make the finished, full-size work. This already has been done and with great success. Such incidents help the photographer and the artist. If they had not pooled their talents in this way, neither would have had the job!

A basis for every good photomural is a good negative—good in every sense, technically and artistically. Those that have great depth are usually best.

Special paper, special adhesives, special lacquers, special mounting materials and other equipment have been developed and are now on the market. Your photo supply shop can order them for you. Use them. Ordinary stuff may be all right. Again, it may not. Why take a chance?

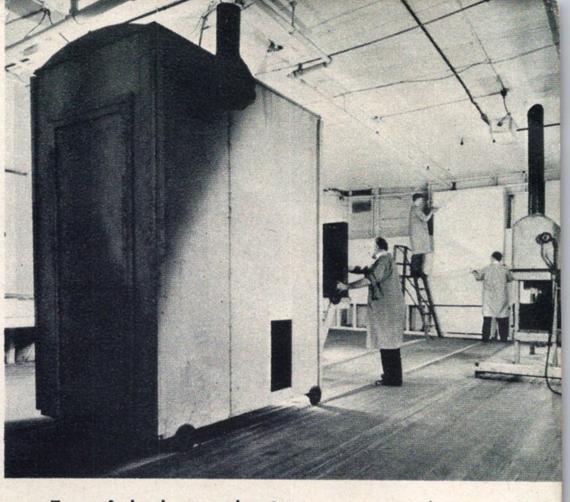
In photomural work, absolute chemical purity of everything is paramount and doubly so because the photomural generally is expected to last a long time and usually represents more than the average financial investment in an ordinary enlargement.

Whenever and wherever possible, make special negatives for the photomural installation. Sometimes, copy negatives of prints are better than the original negative from which the prints were made, but not generally, and it is always best to get the original negative if you can. A still better way is to go out and make the negatives yourself, if you possibly can do so. This insures a good start and you can do a better job of planning. By obtaining original negatives of fine grain and uniform quality for the same job, you will have less difficulty in getting uniform prints.

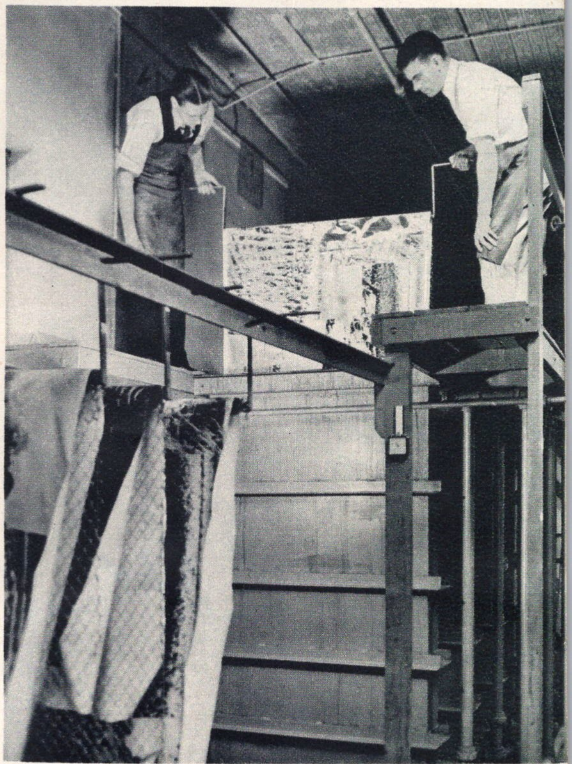
Plan your job in detail from start to finish before undertaking actual operation. Planning costs you nothing but time and thought. It will save you dollars and, possibly, despair or disappointment.

Now for the making of the photomural. A visit to a large plant, where gigantic photomurals are made with ease, might confuse and discourage the amateur who wants to attempt a photomural himself. It should not, however. Whether it is

(*Continued on page 97*)

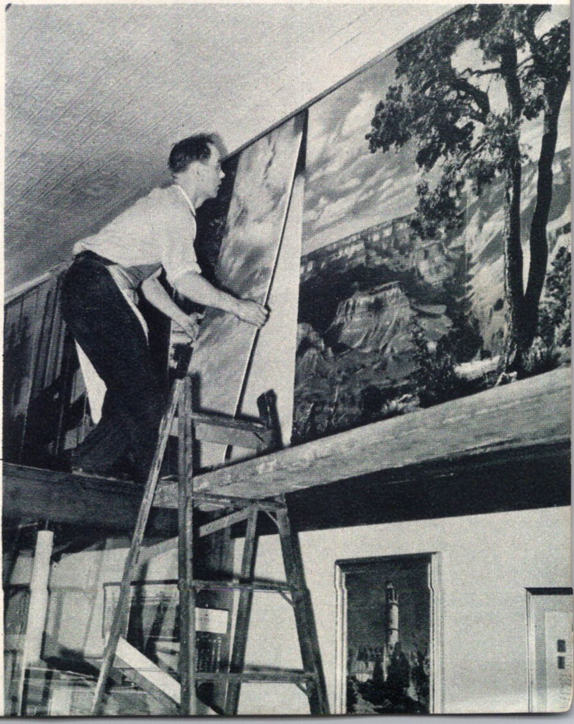


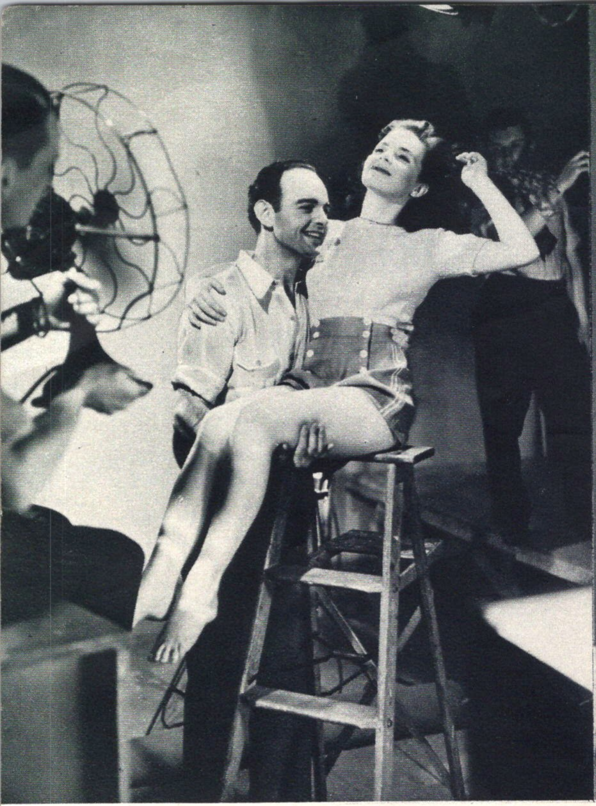
Two of the huge enlarging cameras used in Kaufmann & Fabry's photomural studio.



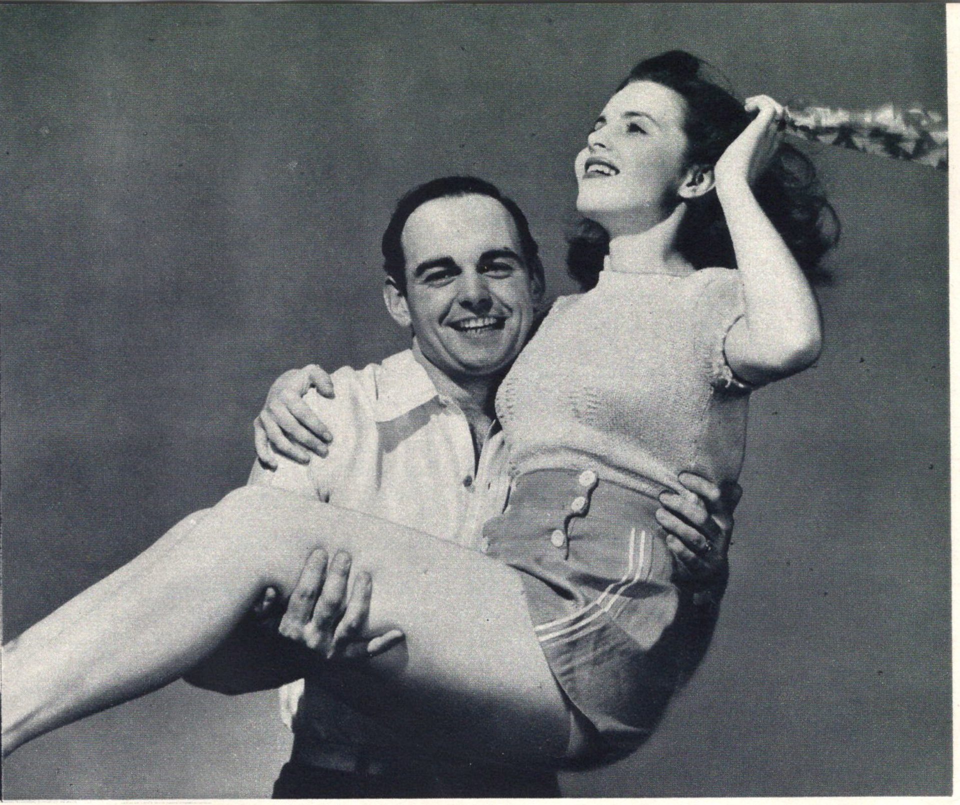
The large prints are draped on hangers and washed well in these special tanks.

Latest innovation is mounting photomurals on detachable boards secured to the wall.





Here is the studio setup for the attractive advertising photograph shown at the right.



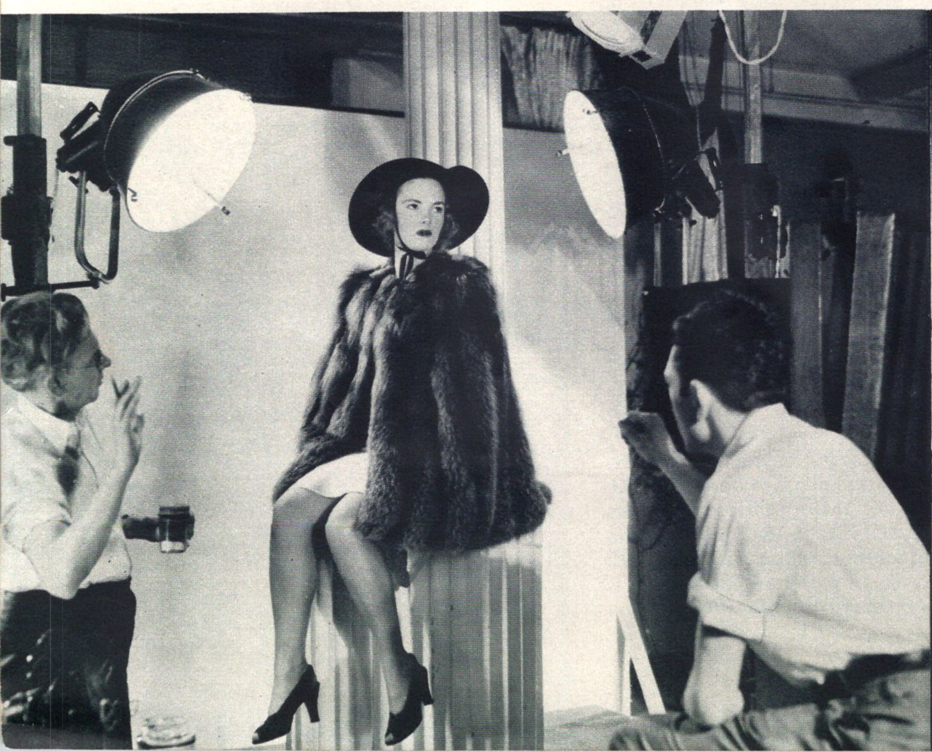
Little would one think that the girl was perched on a step ladder and that an electric fan supplied the apparent breeze. An airbrush removed the step ladder from the scene.

Tricks OF THE TRADE

Many a good advertising shot, envied by amateurs for its naturalness, is the result of clever posing. Models from the agency of Walter Thornton, "The Merchant of Venus," show the more common tricks.

Photographs by courtesy of LOOK Magazine

The model tried to keep cool by wearing only her slip under the fur coat while being photographed on a hot summer day. Electric fans would have ruffled the fur.

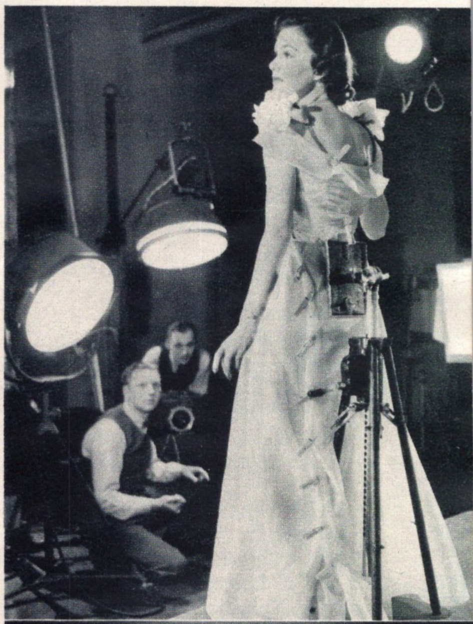


The finished photograph betrays no evidence of the heat and trying conditions under which the model had to work.

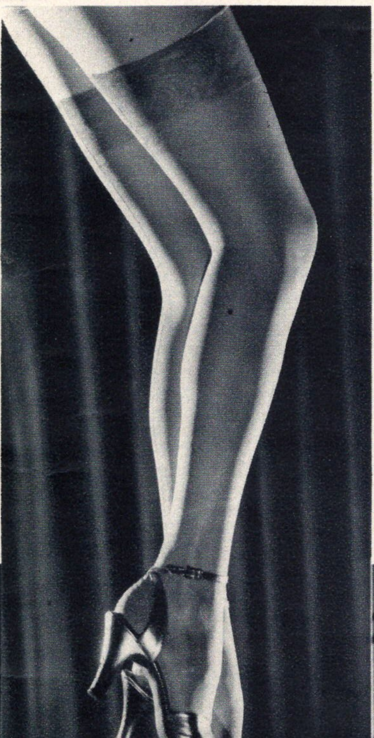
In bathtub scenes the models always wear bathing suits which are cleverly concealed. The straps were dropped in the picture at the right, and suds heaped around the girl.

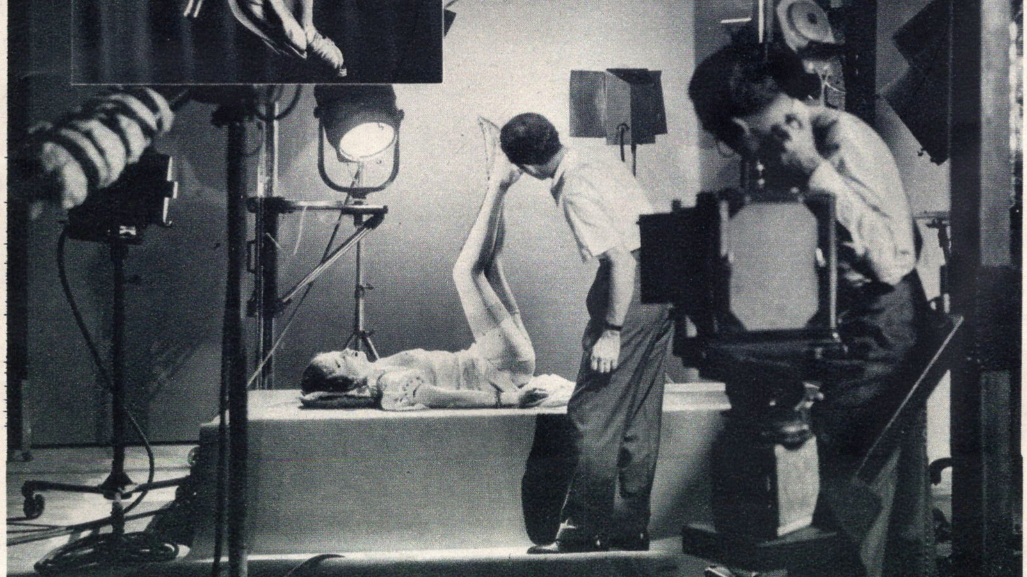
The finished picture presents a charming scene well adapted to advertising various cosmetics.

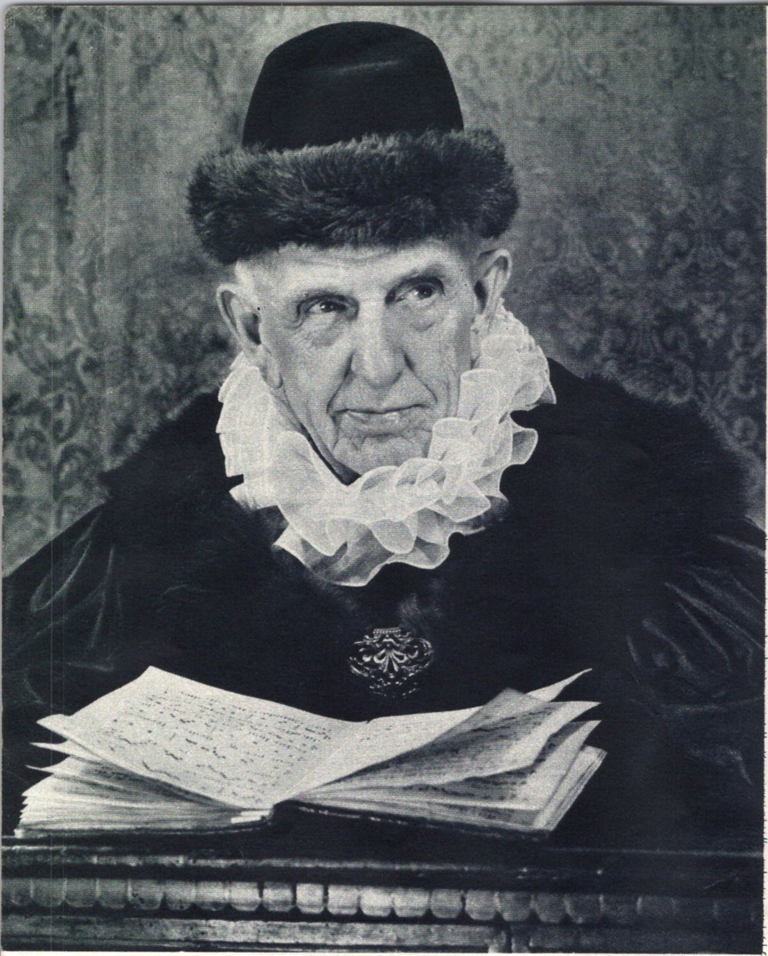
Viewing the finished fashion picture shown at the lower right you would little suspect that clip clothes pins helped drape the gown to the figure. In order to lend height and slenderness to the model, the photographer posed her leaning slightly backward, supported by a brace, and then shot the picture from a very low angle.



Presented with the problem of getting an outstanding picture advertising silk hose, the photographer solved it in an unusual manner. By posing the model on her back with her feet in the air, the cameraman obtained smoothly flowing, graceful lines where muscles would have bunched if the subject had been posed standing.







HIS First Year

by ROBERT W. BROWN

John Hutchins entered photography as an amateur and became an outstanding salon contributor in just one year.

☆

← "A Gentleman of Verona" has hung in many salons and was awarded a blue ribbon at the Yonkers Salon, 1938.

John Hutchins
Photo by Judith Russell

TO have a picture hung in the Annual Salon of the Royal Photographic Society of Great Britain is a signal honor. To have two pictures hung—and no purely pictorial photographer has ever had more than two pictures accepted—is a testimonial of extreme excellence. This year, among those select few photographers whose work was so honored, was listed the name of John Hutchins.

In a darkroom of The Camera Club of New York, of which he is a member, I located this tall, energetic, intensely preoccupied, young man who in less than a year and a quarter has risen from one who had a polite disinterest in photography to an outstanding salon exhibitor, and asked him how he felt when he received the news of his prints' acceptance by the Royal Photographic Salon.

"Felt. How could I feel but happy?" he said quickly. "I thought my prints were good. I worked and literally slaved to make them the best I could produce, and then all of my faith was justified. It was enough to make anybody happy."

It was, and in a sense it wasn't. At the camera club the other members spoke of "Hutch" with some affection.

"Certainly it made him happy," they told me. "But don't think that Hutch ever stands still. He made prints for Pittsburgh, Los Angeles, Syracuse, Utica, and the Leicester, England, International Exhibition in addition to the regular work he's always doing in making new pictures. He keeps himself so busy that he hasn't the time to be happy over any one thing very long."

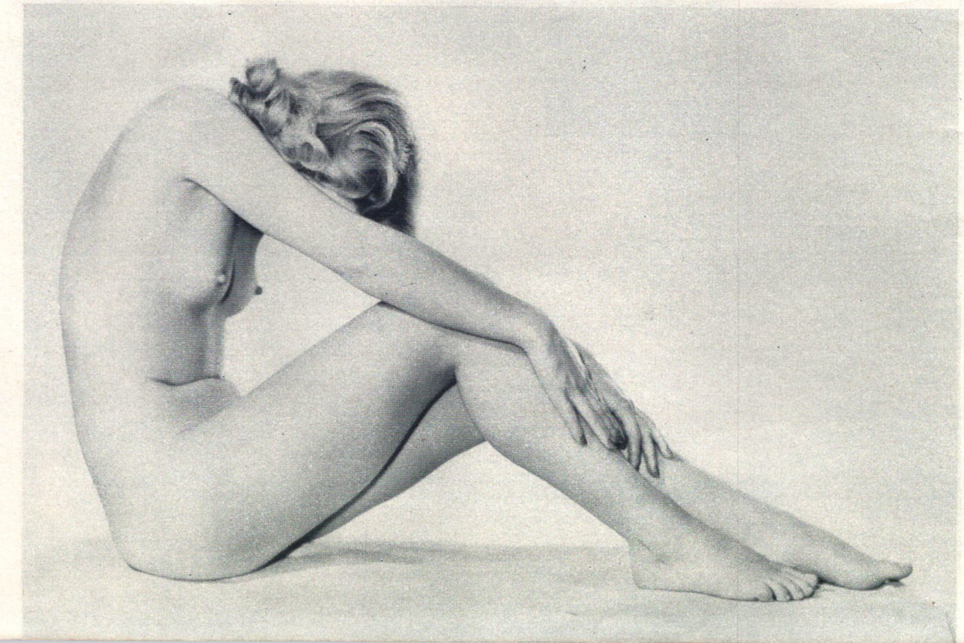
A year ago last October, Hutchins purchased an Argus as a present for a young lady, and was immediately faced with the problem of explaining its operation to her. His profession was that of dramatic coach, and he had coached and aided such stars as Ginger Rogers, Joan Crawford, and Cary Grant in their climb to fame, but he didn't know a single thing about photography.

"Up to that time," he told me, "I hadn't taken more than thirty or forty snapshots in my life. I had to learn a lot about it very quickly so I could explain things correctly to the young lady."

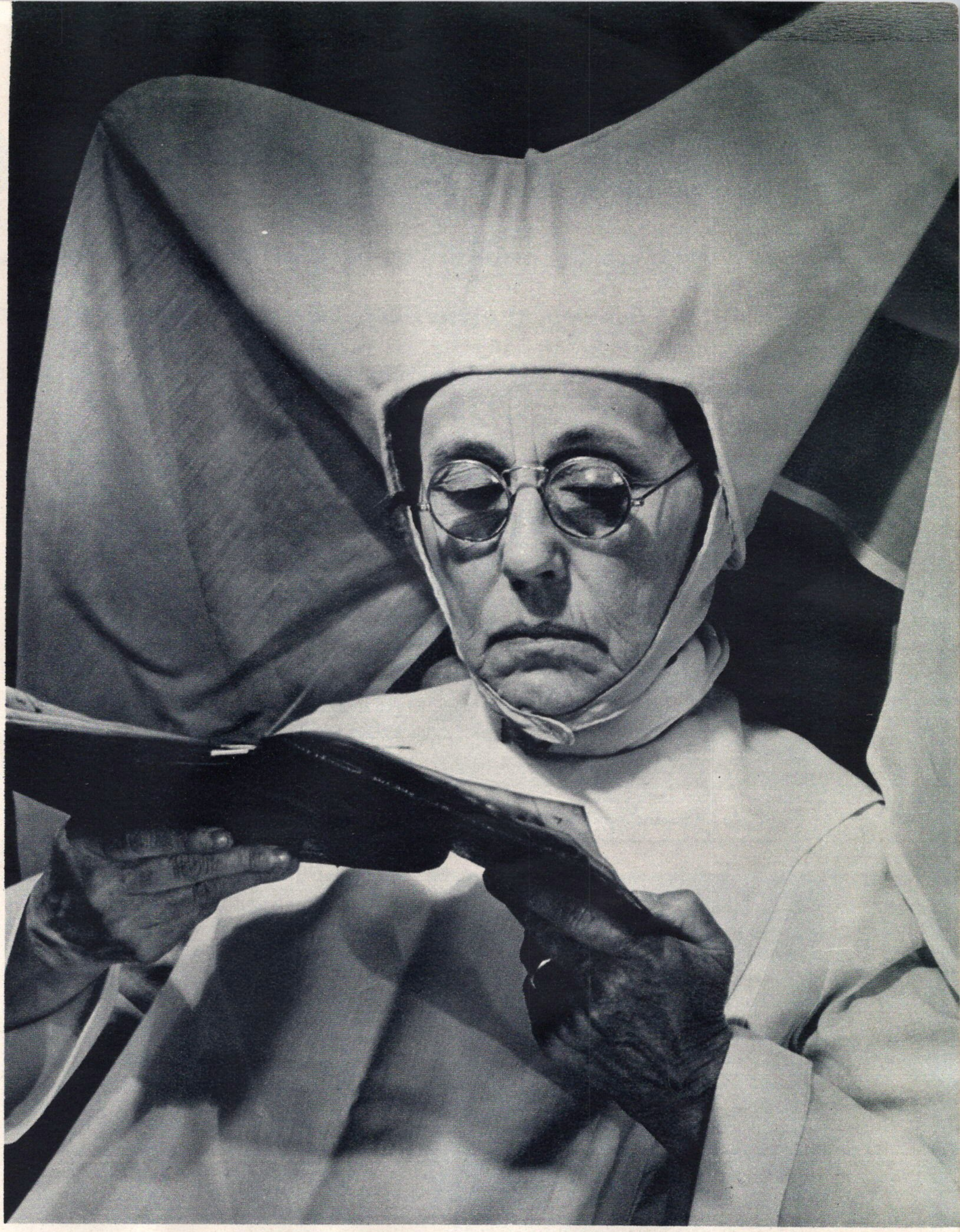
The method he adopted was to purchase and read every magazine he could find about photography, and then go out and take pictures to see how it was done.

"That day about all I did was look for angles," he says. "I crawled on my hands and knees, lay on my belly, climbed upon chairs, fences, and table tops. It was more fun than I had ever had before, and by the end of the day I was fascinated with photography."

Long into the small hours of the night Hutchins sat with the camera beside him reading over and over again the magazines that he had bought. In the morning, as soon as the camera shops were open, he purchased a miniature camera.



This high-key nude study entitled "Grace" was hung by the Royal Photographic Society.



"Mother Superior," an excellent character study, was hung by the Philadelphia Salon.

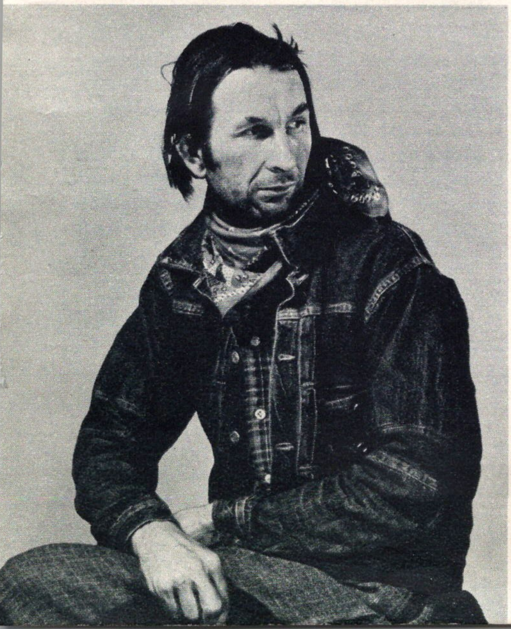
Within a week, finding that he had no facilities at home for working properly, he applied for membership in The Camera Club, just around the corner from his apartment on West 67th Street. Miss Judith Russell, the girl for whom he bought the Argus, joined the club at the same time. At present Miss Russell, with several other cameras added to her list, has become a salon exhibitor with more than one excellent picture to her credit.

At the club, Hutchins literally threw himself into a serious study of photography from all angles. He bought new equipment, experimented with filters, wide-angle lenses, dabbled in candid work, and began to swing generally toward a pictorial interpretation of things. He would make as many as thirty to forty prints from one negative that he particularly liked, and then throw them all out because he couldn't get the effect which he desired. At all times he was continually asking the opinion of everyone about his work, listening carefully, gleaning a helpful point here and there, correcting technical errors which were pointed out to him. Today the opinion of Richard, the club's steward, or that of any new and unskilled member, carries as much weight with him as the considered words of any internationally recognized photographic authority.

Some months after joining The Camera Club, Hutchins started using an 8x10 view camera with a 5x7 back. He bought a number of studio lights and began to take portraits of his parents and friends. Almost immediately he was successful. His work, instead of being scattered over a number of fields, steadied itself and began to take on undeniable esthetic and pictorial significance.

To the long, high-ceilinged room of his apartment that is headquarters for his dramatic work, he added the title of "photographic studio," and immediately proceeded to make the fact fit the title by moving in his camera and accessories.

"I wanted some place to work where things were quiet, and I would be undisturbed," Hutchins said seriously. "A photographer must think clearly, accurately, and quickly. That is impossible if there are any unnecessary distractions at hand."



The texture of this print, "Big Jim Tree," is of a quality that makes it outstanding.

Undeniably, Hutchins was able to see clearly. *Grace,* a high-key nude that had every photographer who saw it gulping with admiration, *Dorothy,* a high-key study of the present Chesterfield Girl, and *Judith,* another high-key portrait which the president of The Royal Photographic Society of Great Britain hailed as "the finest high-key picture in the entire show" when it was hung this year, were soon piled among his finished pictures. [*Judith* has been selected as Picture of the Month and appears on page 39 of this issue.—Ed.]

"Just what is the secret of your high-key work?" I asked Hutchins. "It looks as if you can't miss."

"I can't," he admitted, "and neither can anybody else who follows my system.

"As soon as I started studio work I read everything that I could unearth about high-key picture making, and then decided to do some experimenting. As a result I have discovered that it is no longer necessary for anyone to use only flat lighting in this work.

"The main problem of high-key resolves itself into a delicate matching of the tones in the model's face or figure with the background. The human eye, you know, gathers in much more light than the lens and consequently we see much more than the negative can see, particularly in the shadows of any subject. To compensate for this I use a monochromatic viewing filter, such as cobalt glass, to reduce the tones in both subject and the background to their proper relationship. Then, by arranging my lights in conjunction with my filter, I can balance up my tones until I achieve the proper effect."

As an example of how his high-key work is lit, Hutchins pointed out his picture *Judith.* Two 500-watt floodlights were concentrated on the background of blue-white stipple work and centered directly behind the head. A 1000-watt raw floodlight with wings was used to the

(*Continued on page 95*)

CREATE NEW EFFECTS WITH

You can make striking bas-relief prints from your favorite negatives with the simplest of darkroom equipment. The author presents a lucid description of the technique which can be easily mastered by any amateur.

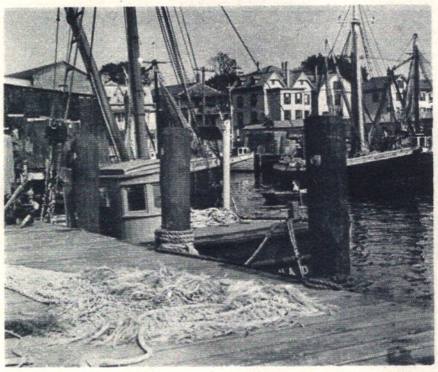


Fig. 1. The first step was making this 8x10 positive enlargement on Commercial film.

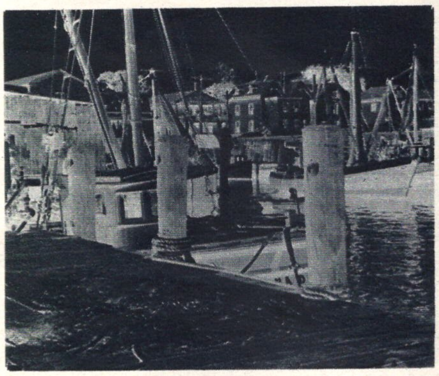


Fig. 2. Next a negative film was printed by contact from the positive in Fig. 1.

YOU have undoubtedly noticed unusual photographs which look like bas-reliefs etched in metal or cut in stone. Commonplace pictures, when so treated, become immediately attractive and interesting.

It is not difficult to make such prints yourself. The process is amazingly simple and can be carried a step further to produce still more striking photographs known as *duplex relief* prints. But first let us consider the simple relief print before we move into the making of the more complicated type.

This type of photograph owes its effect, of course, to an optical illusion. The figures in a scene appear to stand out in relief against the background because we have learned, through years of experience, to associate depth, or difference in level, with highlights and shadows. If shadows occur at the edges of a group of figures they will appear to be raised or lowered with respect to the adjacent area.

Suppose we take a negative of any picture and print from it a film positive having exactly the same density. If the negative and positive are bound together so that they are exactly in register, and the combination viewed against the light, it will be seen that the picture on each has disappeared as the dark areas of the negative completely cover the light areas of the positive, and vice versa.

Now move the negative diagonally in any direction relative to the positive film until it is slightly out of register. The picture will re-appear but it will be changed in form from the original. Around the edges of every figure in the scene there will be a light or transparent area where the figures on the negative and the positive films fail to meet and a dark area where they overlap. If the two films are bound together in this position with photographic tape and a print made from the combination, the light and dark areas around the edges of the figures will appear as highlights and shadows and lend the illusion of depth to the photograph.

The relief print of the wharf scene, which forms one of the illustrations for this article, was made from a picture taken with a miniature camera in a small town in Connecticut. From the 35 mm negative an 8x10 positive enlargement was made on Commercial film, and from this a negative print on film was made by contact. The two films were then bound together with tape, slightly out of register, with their emulsion sides touching and a print made from the combination on projection paper. I usually use projection paper because of its greater sensitivity, which is an asset when printing simultaneously through two films.

No definite rule can be given for the amount and direction of offset between the negative and positive films. This must be determined for each picture by experiment. A greater offset gives the picture greater *depth,* although if carried too far the illusion is lost. Changing the direction of offset changes the location of the *shading* which constitutes the highlights and shadows and this affects the apparent differences in level between various portions of the picture.

It is not absolutely necessary to have the positive and negative films of the same density. Striking effects may sometimes be obtained by having one somewhat darker than the other. This too is a matter of experimentation.

Pictures used for making relief prints should have sharp, clean-cut outlines and good contrast. In making enlargements from 35 mm film, I have been using Commercial or Process cut film and have found them quite satisfactory for this work. Process is the more contrasty of the two. In making the final print I use a medium hard paper.

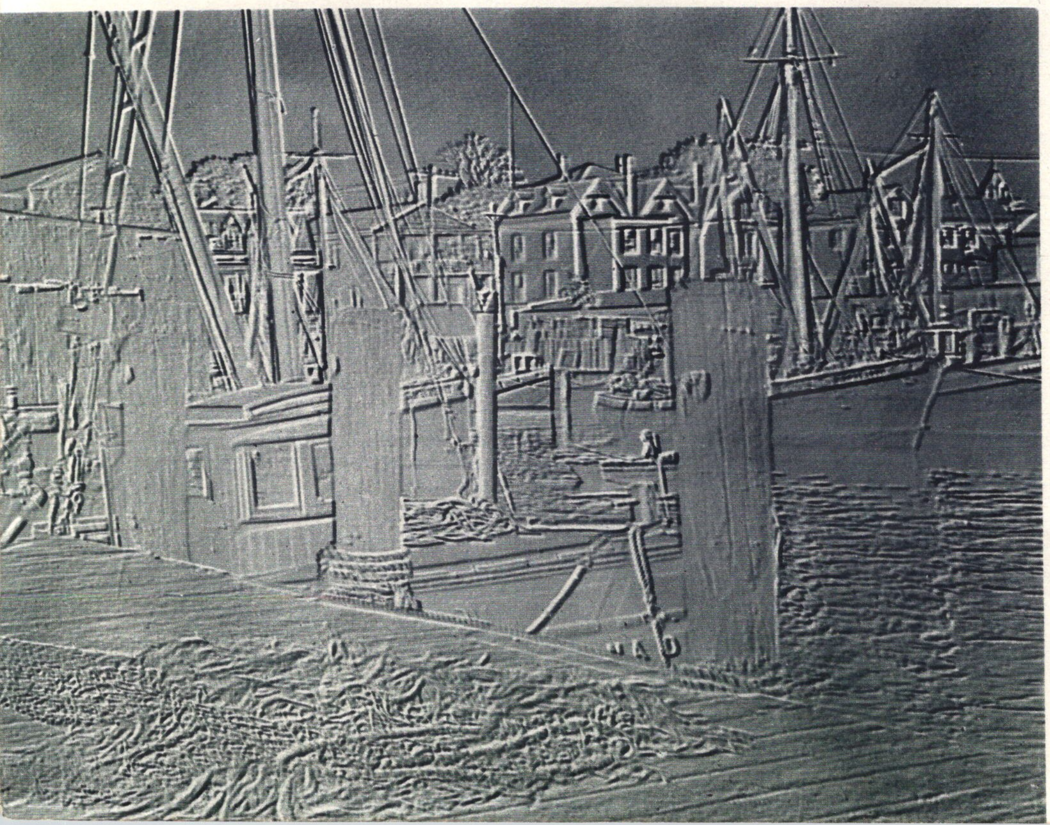


Fig. 3. The films shown in Figs. 1 and 2 were bound together slightly out of register and this simple relief was printed.

SIMPLE AND DOUBLE Relief

by MORRIS J. OLSCHWANG
Amateur Photographer, Brooklyn, N. Y.

This covers in general the making of a simple relief photograph and we can now proceed to the subject of *duplex relief.*

This type of relief print is, as its name suggests, really two relief photographs printed together, one of which is offset in a direction opposite to that of the other. Referring back to the simple relief print, you will recall that the negative was moved slightly on a diagonal line with reference to the positive film. If, on the first relief print, the negative is moved toward the upper right hand corner, then in making the second one the negative would be offset in exactly the opposite direction, or towards the lower left. When the two are printed together, this allows each to stand apart from the other, due to the fact that their respective shadings are thrown in opposite directions.

In order to gain a clearer understanding of the duplex relief print, it will be well to follow through on the making of one. As an example, let us consider the composite print of the mountain lake scene with the signature and stars apparently cut into its surface. This scene was photographed at the Weirs in New Hampshire with an *f* 2 Leica equipped with an "A" (red) filter. An 8x10 positive on film was made by projection. From this positive an 8x10 negative film was printed by contact (Fig. 4).

The next step was to secure the design of the signature and the stars. This was first drawn on plain white paper with India ink. It was then photographed with the Leica, using an extension tube. Due to the considerable magnification, the grain and irregularities of the ink on the paper show up quite prominently. Again a positive and a negative film, both 8x10, were made (Figs. 5 and 6).

It was now necessary to obtain *one* film on which the signature and stars would be shown in relief against a *positive* image of the background scene. One of the films (either the positive or the negative) of the signature and stars was taped to the negative of the lake scene. This assembly was then taped to the glass window of a contact printing frame in such a manner that the edges of the assembly were held about 1/16-inch *away from* the right and lower edges of the frame.

An unexposed film was then placed, emulsion side down, on the assembly,

(*Continued on page* 101)

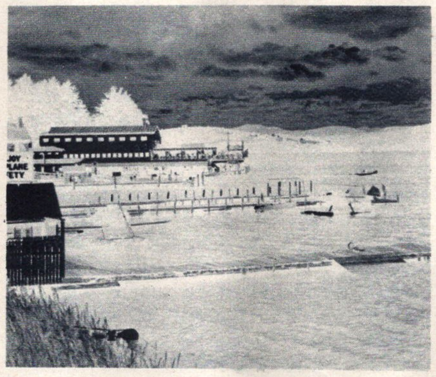


Fig. 4. The negative printed by contact from 8x10 positive enlarged from 35 mm.

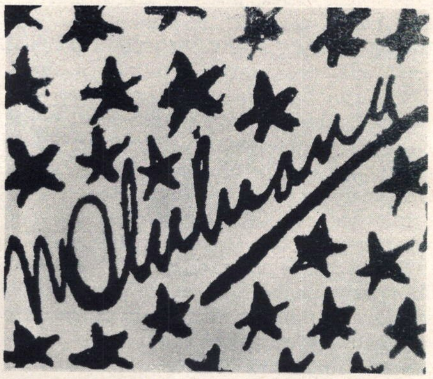


Fig. 5. Positive 8x10 film made by projecting the design from 35 mm negative.

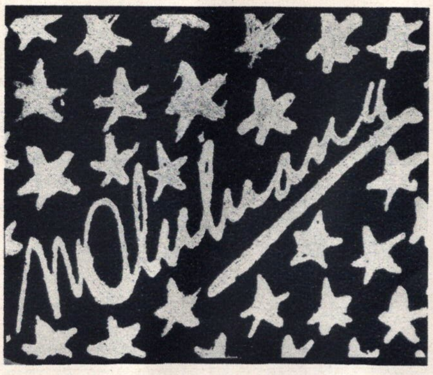


Fig. 6. Negative 8x10 film of the design printed by contact from Fig. 5.

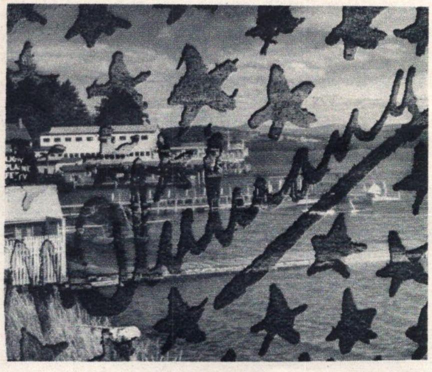


Fig. 7. Simple relief of design over positive of background, all on the same film.

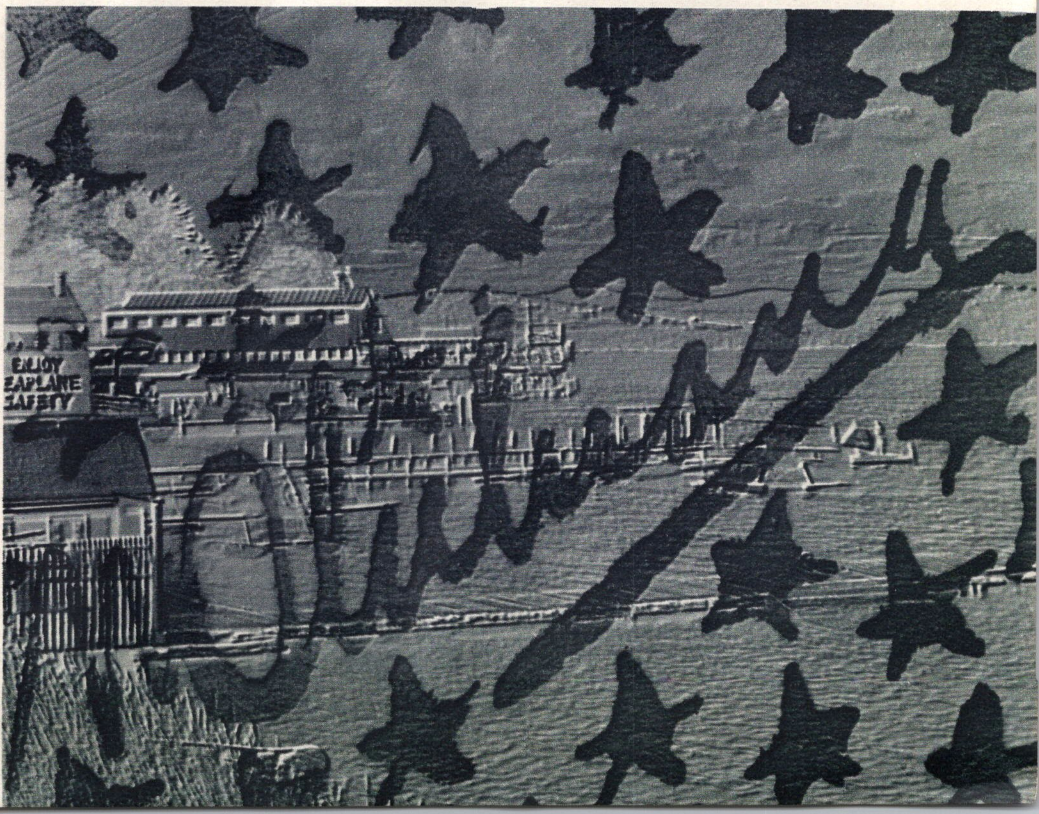


Fig. 8. Completed duplex relief produced by making a print on paper of the films in Figs. 4 and 7 placed out of register.

PICTURE ANALYSIS

by NICHOLAS HÁZ, F. R. P. S.

Teacher and Lecturer, New York City

☆

TOY TOWNS, little heaps of sand, and tubs full of water might suggest cities, deserts, lakes, and the sea more convincingly than the real things, if the "props" are photographed well and the real things not so well. There can be more glamour, mood, and pointed meaning in pictures shot in the corner of a movie shed, than those taken of the great city of Los Angeles, if the set designer and photographer of the miniature are first raters, but the one who snapped Los Angeles is mediocre.

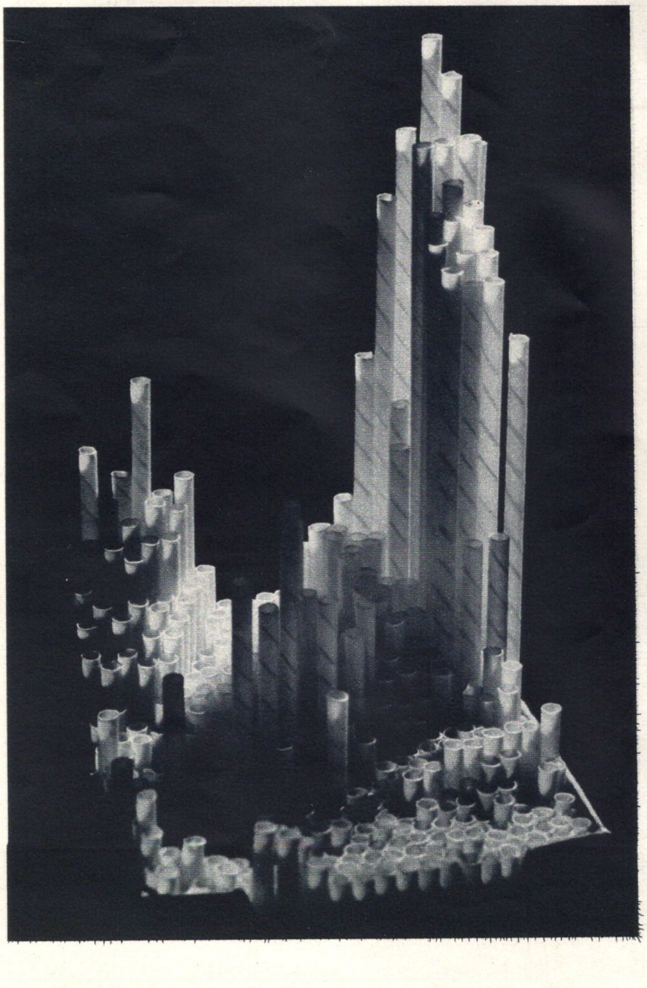
Some people capture more "outdoors" in a few blades of grass photographed *indoors* than others can get in six months of snapshooting over the prairie country and the redwood forests of the West.

The picture shown here, taken by Yousuf Karsh of Ottawa, Canada, represents a humble box of soda fountain straws that have never left the box. Yet they pack more glamour of the big city than there is in reams of snapshots brought back by trippers to New York, Chicago, and other metropolitan centers.

The explanation of this seeming paradox is that the glamour is not in the buildings but the photographer's head. He embodies the glamour not necessarily by shooting tall buildings but by the proper management of *line composition.*

Line composition is a two-legged proposition. The first leg is the sum of the axes of the images which, in relation to each other and to the edges of the picture, are commonly known as the line composition of the picture. But the second leg, the sum of *outlines* of the images, often called "contour," contributes so much to the general effect of a picture that it must be counted part of the line composition. The two together are great factors of the mood and meaning of the picture.

Vertical lines carry the mood of dignity, importance, strength, honor, and pride; sloping lines stand for action, motion, work in process. The two together show proud yet active dignity, lively strength, important elements of glamour.



CITY OF STRAWS by Yousuf Karsh

We arrive at these statements by *abstraction.* To abstract means first: to remove, to take away, to separate; second: to generalize, to make universal or all-inclusive. The process of abstraction in this case could have been as follows: one man photographs a tall building with sloping roof lines. He identifies the building, gives the data about the photographer, time and place of making the picture in a caption which is added to the photograph. This makes a *concrete* picture, because he defines a given thing, pictured by a certain person, at a specified place, and at a certain time. Newspapers like concrete pictures.

Then someone sees the picture and feels that it is glamorous. That is, he abstracted the emotion of glamour from the concrete picture. This is the first part of abstracting; he distills an emotion from the concrete representation. So he proceeds to rename the picture and calls it *Pride,* or *Strength,* or *Glamour.* This device is quite well known to pictorialists who love to rename pictures of little girls *Innocence,* particularly if they have forgotten the child's name.

A third person might feel the glamour and try to find out how it got into the picture. If he is a good analyst he will soon find that glamour is not in the buildings but in the axes and outlines of the images. He then proceeds to make a picture of lines that do not represent a building, but are simply lines. Yet this line picture will show as much glamour as any picture of tall buildings. The abstraction is now complete. The distilled emotion, which is abstract, is now expressed by ordinary lines, which also are abstract. The two together make an abstract picture.

A fourth person, being a witty photographer, such as Yousuf Karsh, re-embodies the glamour of the abstract lines, by covering them with concrete likenesses of some trivial objects, such as soda fountain straws. By this device the straws become dignified, strong, important, and fully suggestive of a skyscraper city of our day or of the future.

Karsh is the official photographer to the Governor General of Canada, and is an A.R.P.S. He so loves photography that he puts all his free time into it.

Outside of its wit and clever suggestion of the beauties of the skyscraper city made through humble objects, this picture has many virtues. It has good proportion; that is, the number, size, and position of the straws is neatly managed. There aren't too many nor too few, they are neither too big nor too small, neither equal in size nor too different. They aren't quite in the center, in the corners, or too near to the edges of the picture. Their shape is so managed as to resemble the shape of skyscrapers normally seen.

The tone values are rich. Plenty of nice greys between the black and the white. Nothing needed correction for color. The edges are sharp all over, as they should be. Printed on glossy paper to cash in on as many of the greys as it was possible to capture in the negative, and to show the texture of the straws. There is fine depth, that is volume, near and far, although Karsh has put the brightest spot on the far side of the scene. He counteracted this unexpected move with adroit handling of his linear perspective. There is just enough quiet dignity and sufficient movement to serve the purpose of the picture.

There is good balance. The picture hangs well together and is quite clear. Anyone can tell what the subject is, although some spectators won't recognize the wit of imitating the skyscraper city. The picture carries beautifully. The emphasis is on the taller group on the right. Next in importance and almost overwhelming the former is the bright spot below on the left. But both places being important, the emphasis is correct. The rhythm is free, and because parts of this whole fit well together this is a good picture in my opinion.—

PORTRAIT BACKGROUNDS

by STAN JENKINS

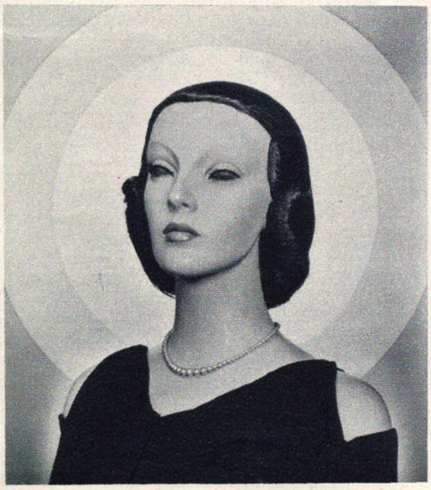
President, Utica Camera Club, Utica, N. Y.

Background design will often add considerable interest to a portrait. Some novel setups are shown on the next two pages.

THE background is a definite part of your photograph—a unit in the picture's composition. For this reason it deserves considerably more attention than is usually given to it by the average amateur. And this is just as true in the case of indoor portraiture as it is in landscape photography. After the subject has been suitably posed and lighted the background should be given equal consideration before the exposure is made.

The tone of a background is dependent on the color of the material used and the manner in which it is lighted, while its character depends on the nature and design of the material. Subject and background should be illuminated independently to permit maximum control over each, as the tone and character of the latter has a great bearing on the appearance of the subject in the finished work.

While some photographers may prefer a perfectly plain background in their portraits there are plenty of other possibilities which are just as pleasing and in some cases more appropriate. Background design will often add considerable interest to a picture and some will prefer it to the more conventional type. In every case the subject is, or should be, the controlling factor. A plain back eliminates any danger of distraction, and many variations of light and shade are possible with it. For this reason it is perhaps the safest for the beginner to use.



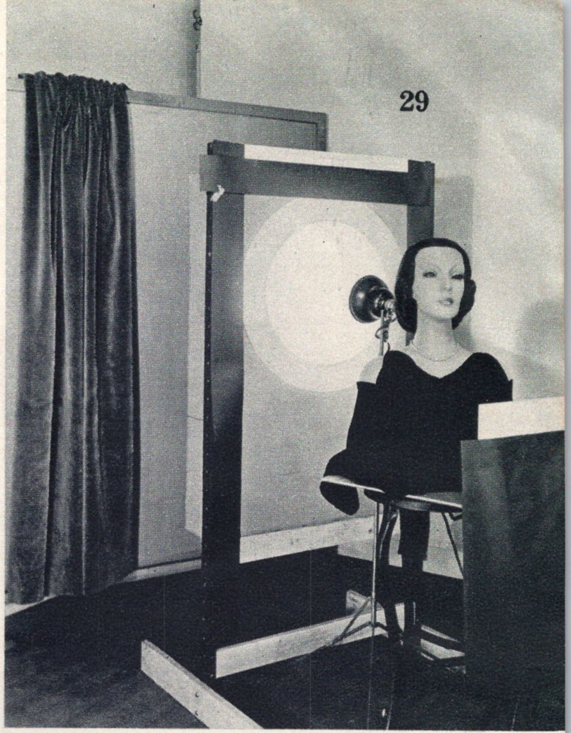
Two discs cut from paper of different tones were used to make this background.

We must not overlook the fact, however, that there are times when a plain white background is *not* the most suitable for the subject. A little decoration, which in itself can be very plain and subdued in both tone and design, will often enhance the appearance of the model. While a plain ground could represent a wall it can also simulate the sky. How often do we see a lady in evening dress against the sky? In the case of a subject dressed in outdoor costume the plain ground would be more appropriate and a wallpaper back would be entirely out of place.

We are accustomed to seeing people in their natural indoor surroundings—against backs of wall-paper, drapes, windows, doorways, wood paneling, and other interior decorations. Several suggestions for these indoor backs are shown on the next two pages together with some fancy designs, modernistic and otherwise. Some are shown in extreme form to stimulate the imagination and are naturally subject to any modification you care to use.

The only variable factor in the illustrations is the back. Attention is directed to it. The same model is used throughout, with the same flat lighting (except in two cases) same pose, same camera angle. This model's black hair does not show well against the dark background without special lighting for such cases, and such backs are more suitable for fair-haired subjects or light colored objects. Keeping this in mind you can use any design and reverse any tone depending upon your subject. The *shape* of the design is also to be considered in relation to the shape of your subject's face which may be round, oval, or oblong. The illustrations are suggestions for modification to suit your fancy and your subject, and not necessarily recommended for using exactly as shown. The tones of any design, however extreme, can be made as delicate as you wish.

Many interesting background designs can be made from common materials by anyone, and at practically no cost. They will serve for portraits or still objects and can be set up in almost any room in the house. Both single and double backs can be used. The single one may be a plain wall, a piece of fibre wallboard, a large sheet of cardboard, or the side of a cardboard packing case. These boards can be supported against anything handy or can be fitted to a special portable frame with feet. Get some wrapping paper or wall-paper in three or four tones, cut it in any designs you fancy. These paper shapes can be tipped on with Scotch tape and easily removed. If you have a number of cardboard panels, paste a design on each side so you will have a number of permanent backgrounds all ready for action and repeated use.



Setup used in making the illustrations, showing how the background is lighted.

A double back adds still more to the possibilities. Cut an opening of any desired shape in the wallboard or card and you see the second back through this opening. The cut-out card is placed 18" to 24" in front of the larger back. With no other means but light and shade applied to each back independently, you can keep busy for months in spare time without exhausting the effects to be secured in this way. The second back can be a wall, another piece of card, or fabric of any shade and design.

A third method is the use of curtain or drape material. This can either be plain or figured, and lighted and shaded independently. Another stunt is to use ribbons of white or grey paper on either light or dark backs, plain or figured. They can be used on either one or both sides or across the whole back. These strips can be of different widths and considerable variation of both tone and design is possible.

Certainly one can have a lot of fun trying to keep out of the photographic rut by attempting to produce something unusual and interesting. Many possible background designs can be made to enhance, rather than detract from, the appearance of the subject and the composition of the picture. All of the illustrations shown on the following two pages are straight single shots. There were no retakes, no retouching, no dodging, no masking, no double printing, no spotting.

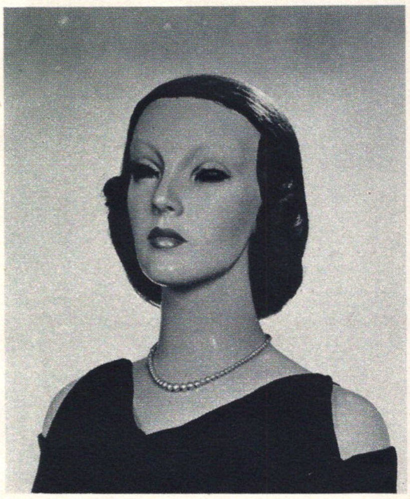
Here's a challenge to your imagination and creative ability which can be met at practically no cost. And the possibilities for interesting and unusual results are unlimited.—

BACKGROUND Design

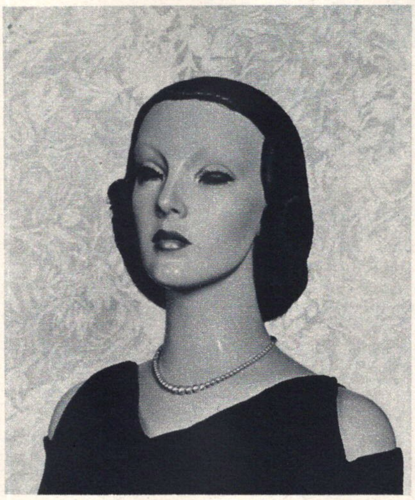
Photographs by

STAN JENKINS

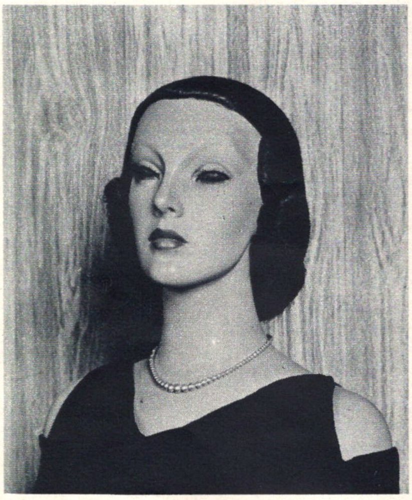
A variety of pleasing effects achieved by using different background patterns as described on the preceding page.



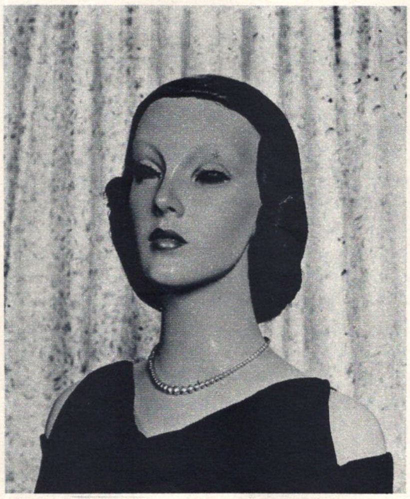
The conventional plain, white background is illuminated from below. An additional light is directed on the model's hair.



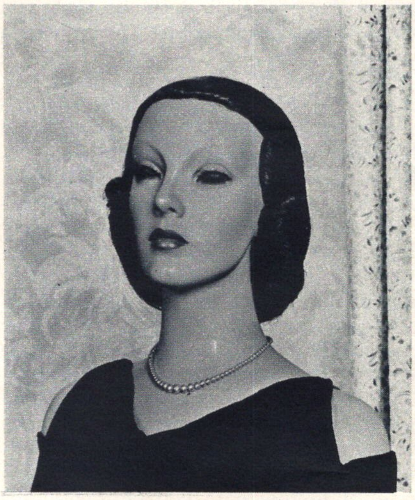
A piece of patterned wall-paper makes a very appropriate background for the portrait subject dressed in indoor costume.



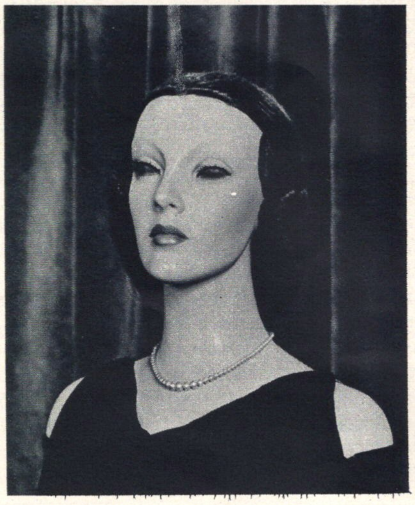
Here is an extremely attractive wall-paper pattern that makes a very pleasing background design for indoor portraiture.



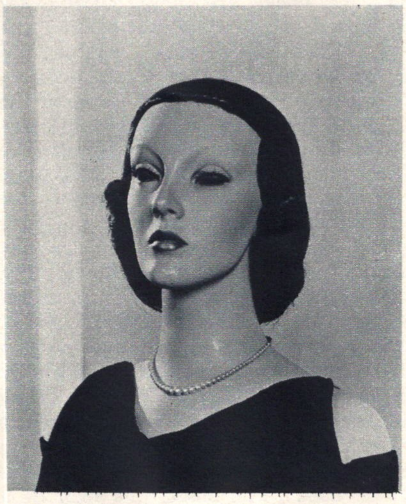
Thin drape material of light color and with an all-over pattern is arranged in small folds to give this unusual effect.



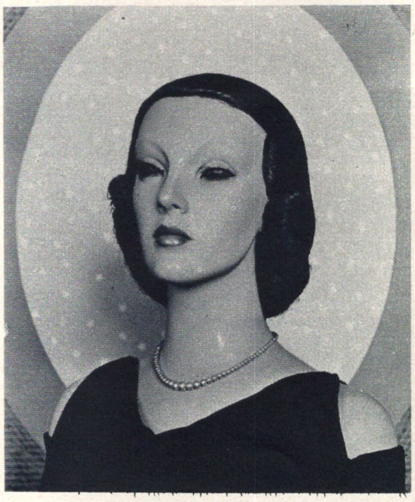
Drape material can be used in combination with a wall-paper background. Here is one of several possible arrangements.



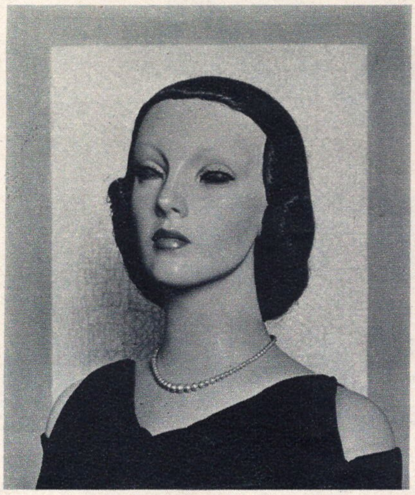
A rich background is obtained by using a heavy, plush drape. This example would serve better for a light-haired subject.



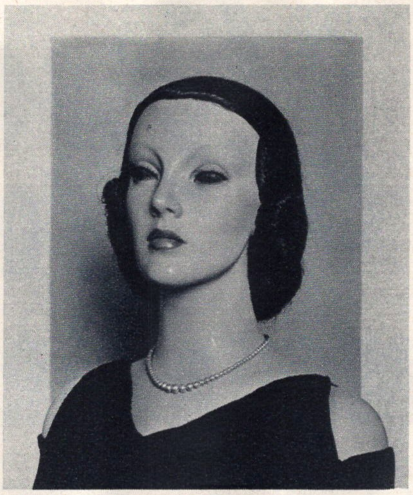
A ribbon of white paper is placed on a plain cardboard background to break the monotony and add interest to the picture.



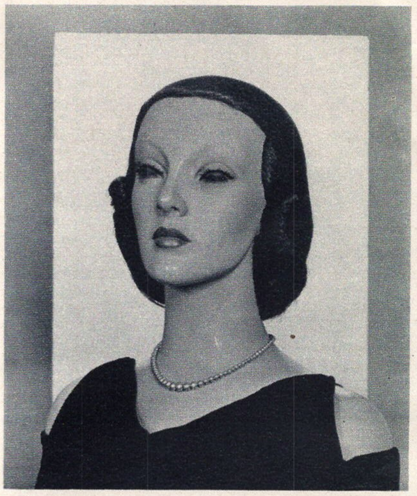
Here is a suggested variation in tone combination applied to the oval shape and made of pieces cut from wall-paper.



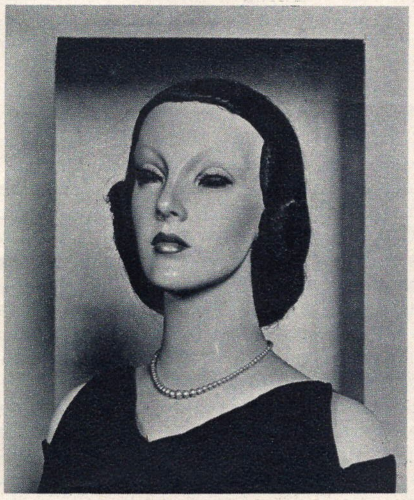
A small panel cut out of wall-paper is mounted on a plain card. This design offers many tone and pattern variations.



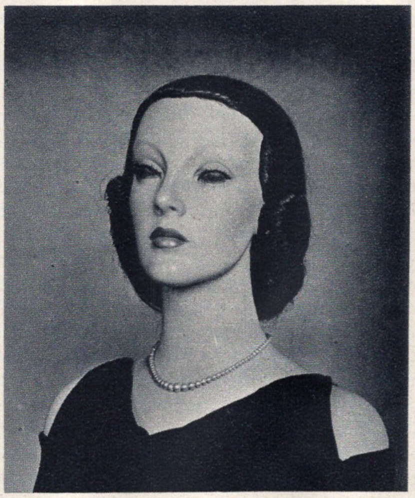
An almost identical background in which the effect is obtained by using the same material in reverse—card on wall-paper.



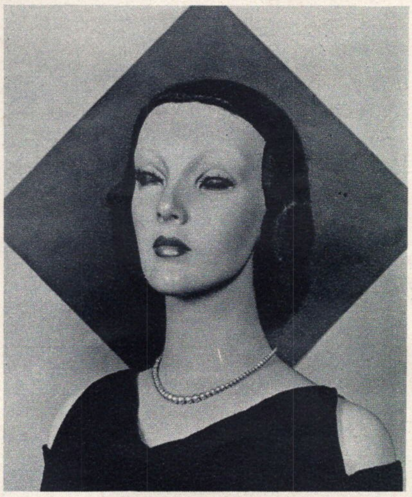
A double background. An opening is cut in one card which is placed 18 inches in front of another, separately lighted.



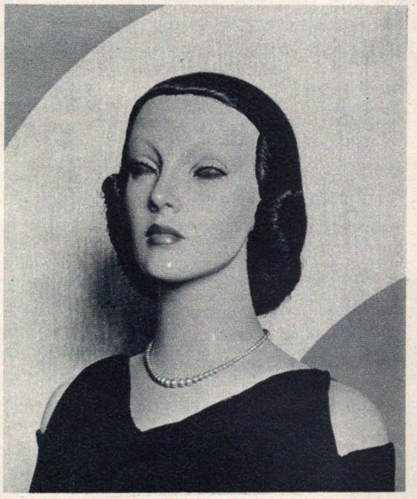
Double background without the illumination on the back card. This design has an almost endless number of variations.



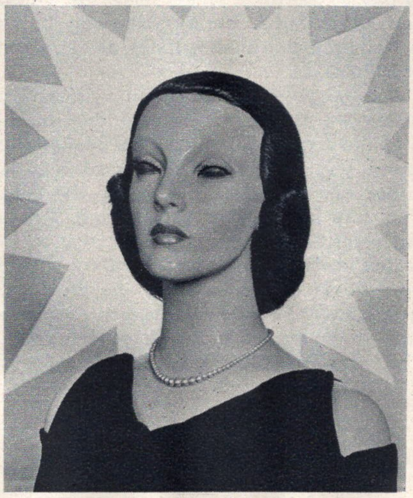
A piece of plain brown wallboard is used here. Cards are placed near the back to cast a shadow on the top and left side.



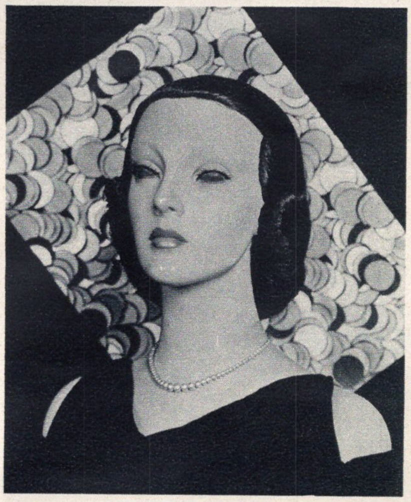
Another design cut from paper of two colors. This pattern can also be made in any combination of tones desired.



Designs of this type are unusual and interesting. This one gives exceptionally pleasing composition to the picture.

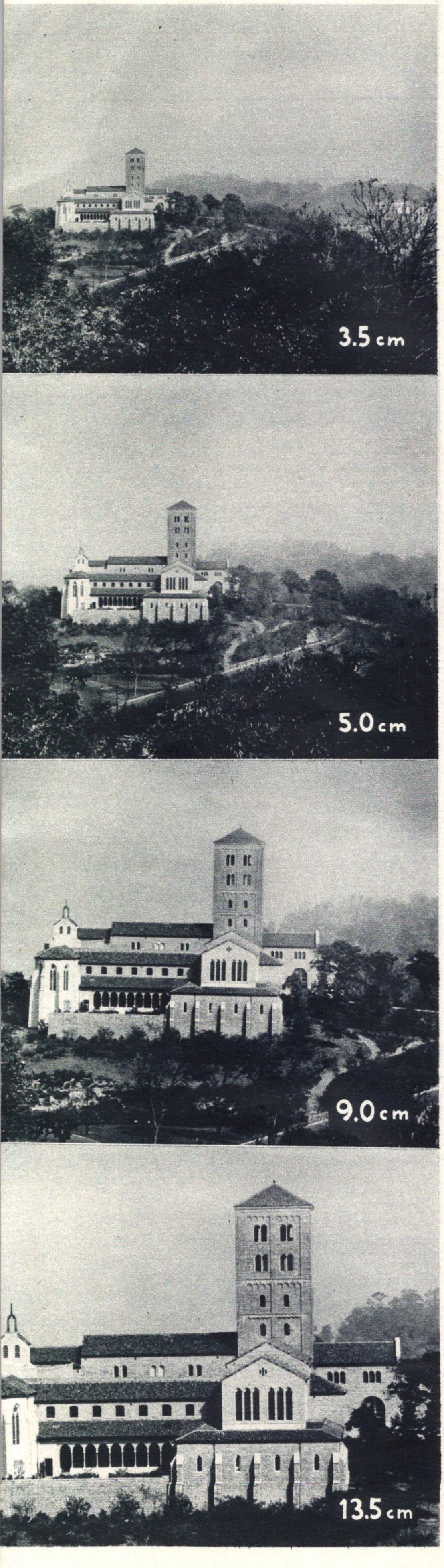


Dynamic pattern suitable for portrait of the vivacious youngster. Try this with back out of focus to soften the lines.



Any number of modernistic settings can be made with panels cut from novelty paper of odd and unusual design as shown.

Lenses FOR THE MINIATURE CAMERA



A series of pictures made from a fixed position with the same 35 mm camera and lenses of different focal lengths as indicated. Note that the size of the image becomes larger as the focal length of the lens used becomes longer. The relationship of the different objects one to the other remains the same in every picture.

OWNERS of miniature cameras have often found it impossible to approach a distant object close enough to get a sufficiently large image on the film. Or perhaps the optical limitations of their camera lenses have not permitted the photography of small objects at close range. These problems make the camera owner curious to know more about the different lenses that are available and just what each one will do.

It can be assumed that the lenses described are high grade and well corrected to give sharp images. There is no need to clutter up the atmosphere with detailed discussions of the several different types of aberrations that trouble the lens designer and make poor lenses poor. The miniature user has either paid for a fine lens or he has to put up with one that is only fair and there is nothing he can do about it. It can be said, however, that on good miniature cameras there are practically no poor lenses. The expensive ones are all very fine; the cheaper ones are mostly good but will not give quite as sharp negatives when used wide open. On the other hand there are no perfect lenses in use; even the finest of them have a certain amount of uncorrected aberration, hence the need for stopping down to get the best sharpness whenever possible. How would you like to pay $3,000 for a single lens? It would cost all of that to build a lens very much better than the ones usually used on the best cameras.

For purposes of practical application lenses are classified by speed, or *f*-number, and by focal length. The higher the speed and the longer the focal length, either one or both, the higher the cost. The very small, short focal length lenses are relatively simple to make well corrected and fast as exemplified by the 16 mm movie camera lenses. As the focal length and size increase the cost of building rapid lenses increases enormously. The comparative inexpensiveness of really fine and fast lenses in the small sizes is one of the outstanding advantages that the miniature camera possesses.

Focal length of any lens is the distance from the optical center of the lens to the focal plane when the lens is focused at infinity. The focal plane is at the surface of the film in the camera. The distance from there to the optical center of the lens is usually measured in centimeters (cm) and so marked on the lens. Many lenses are described in millimeters (mm) and for some reason discussions of lenses refer to the focal length in millimeters, even though the particular lenses in question are marked in centimeters. This should cause no confusion if it is remembered that 10 millimeters equal one centimeter so that a 5 cm lens is the same as a 50 mm one. Incidentally there are very close to 2½ cm to an inch; 12 inches is as nearly equal to 30½ cm as one can ordinarily see to measure.

Upon the focal length depends the size of the image on the film—the longer the focal length, the larger the image. Conversely, the longer the focal length the less the width of view taken in and the greater the distance at which fine detail will be recorded. Likewise, the longer the focal length the less distortion there will be in nearby objects.

Herewith is table showing the angle of view and the relative size of image with different lenses, for cameras using 35 mm film, based on the 5 cm lens as unit size:

Focal Length in cm	Relative Size of Image	Angle of View
2.5	.5	85°
3.5	.7	65°
5.0	1.0	48°
7.5	1.5	33°
9.0	1.8	27°
13.5	2.7	19°
15.0	3.0	17°
20.0	4.0	12°

The angle of view figures are average figures in each case and depend to some extent upon the distance setting of the lens.

Lenses are rated for speed by the *f*-number—*f* 2, *f* 3.5, *f* 4.5, etc.; the lower the *f*-number the faster the lens. The speed of a lens depends upon the amount of light that it will let through. The amount of light let through, however, does not depend on the actual stop opening but on the relation of the stop opening to the focal length. The stop opening as a fraction of the focal length is what determines how much light the lens

The author tells how to choose a camera lens according to the purpose for which it is to be used, and explains in a simple manner the meaning of such lens terms as f-number, lens speed, focal length, and depth of field.

by LAURENCE DUTTON

Illustrations by the author

will pass, and *f*-number is that fraction. A lens of a certain speed, as *f* 4.5, will have a much smaller actual opening if it is a lens of short focal length than if it is a long focal length lens. The ratio (of focal length to aperture) will be the same in either case and the ratio governs the speed of the lens. In long focal length lenses the actual opening must be quite large to maintain the same ratio.

The lower the *f*-number the faster the lens. The speed and *f*-numbers of lenses for purposes of comparison (and price) are taken as the lowest *f*-number (largest opening) at which the lens will give a sharp image. Lens stop figures as marked denote the relative diameters of the stop openings. But, since the lower *f*-numbers denote larger openings we say that the diameter is *inversely proportional* to the *f*-number. The actual amount of light let through, however, is governed, not by the diameter of the opening but by the *area* of the opening and the area is proportional to the *square* of the diameter; twice the diameter, four times the area, or, three times the diameter, nine times the area, etc. So the amount of light let through for exposure varies as the square of the diameter of the stop opening. Gathering all the above together says that the exposure effect (or speed of the lens) *varies inversely as the square of the f-number.*

It is a complicated system but one that photographers have to put up with. Fortunately, exposure meters and tables are so arranged that for a given light setting the *f*-numbers to use are read off directly under the figures indicating the shutter speeds. Thus the calculations of inverse square are avoided. There is another aid to simple calculations in the stop markings on lenses. The figures are arranged in such a manner that each succeedingly smaller stop allows the film to receive ½ the light passed by the next larger stop at a given shutter speed. For equal exposure the shutter speed must be cut in half (to double the exposure time) when the diaphragm is set one stop smaller. If trouble is experienced in remembering which way is stopping down, watch the diaphragm within the lens while making the adjustment.

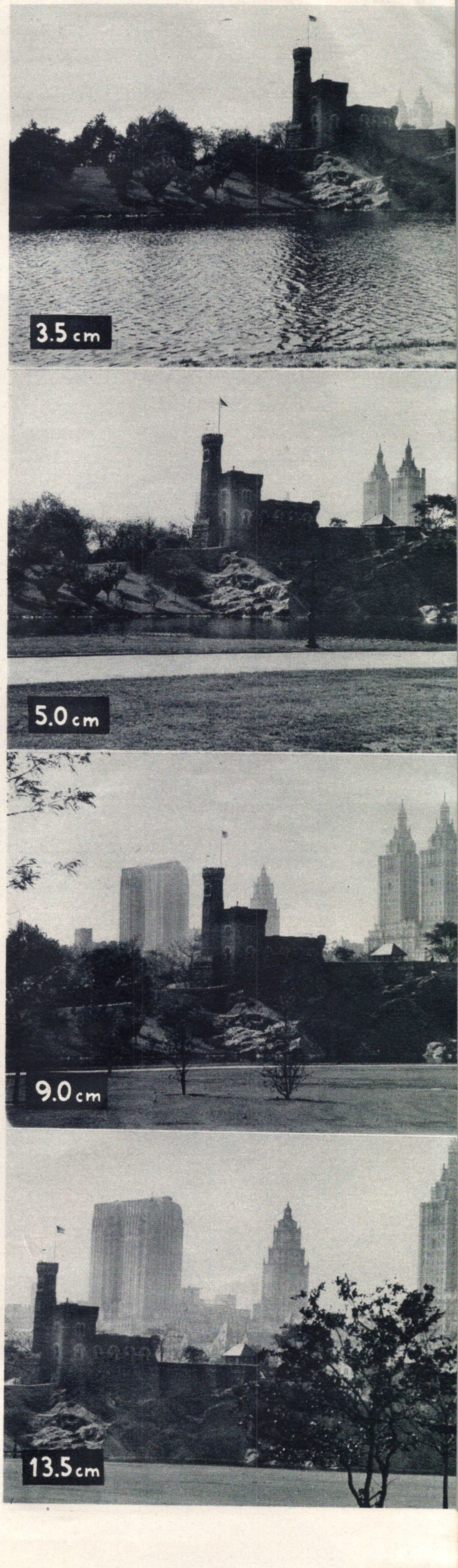
The following table shows the relation of stops or *f*-numbers to the amount of light let through and to the exposure time required to secure equal exposures at the different stops:

F-Number	Light Transmitted	Exposure Time Needed
1.5	100	1/100
2.2	50	1/50
3.2	25	1/25
4.5	12	1/12
6.3	6	1/6
9	3	1/3
12.5	1½	2/3
18	.8	1¼
25	.4	2½

The size of the stop or *f*-number determines not only the speed of the lens but also the *depth of field.* Depth of field refers to the nearest and farthest point—before and behind the object focused on—that will be in sharp focus. The wider open the lens is the less the depth of field and at apertures of *f* 3.5 and greater the field is very shallow. The depth of field decreases also with increase of the focal length of the lens. The telephoto lenses wide open have very little depth of field, while the 3.5 and 5 cm lenses have considerably more depth of field wide open. As any lens is stopped down the depth of field increases rapidly.

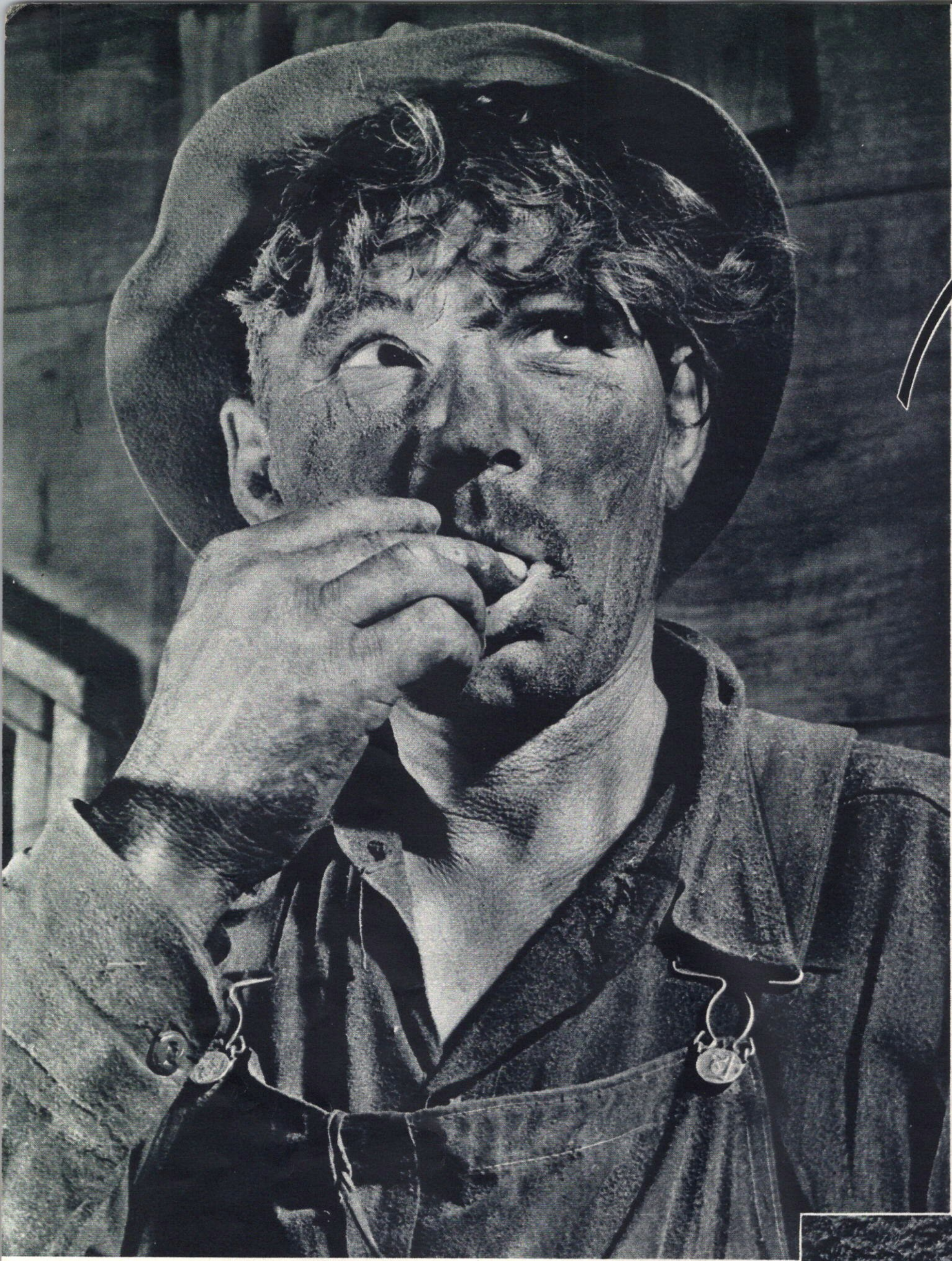
A shallow field can be serious in certain types of work. Suppose in making a portrait we use a 7.3 cm focal length lens six feet from the subject. A stop of *f* 1.9 would give a field in sharp focus only about two inches deep. If the lens were focussed sharply on the nose of the subject, most of the rest of the face would be out of focus and blurred. The need for care in focussing can be readily seen when using any lens wide open. Opening up a lens is like reducing the size of a target, and adjustments must be accurate to hit it at all. Hence the advisability of using the smallest stop possible under the conditions met with. Sufficient depth of focus for practical purposes can usually be secured by using about *f* 7 on the all-purpose lenses and *f* 12 on the telephotos. There is no great advantage in using smaller stops unless extreme depth of field is required. Shallow focus troubles are worse when taking closeup

(*Continued on page* 86)



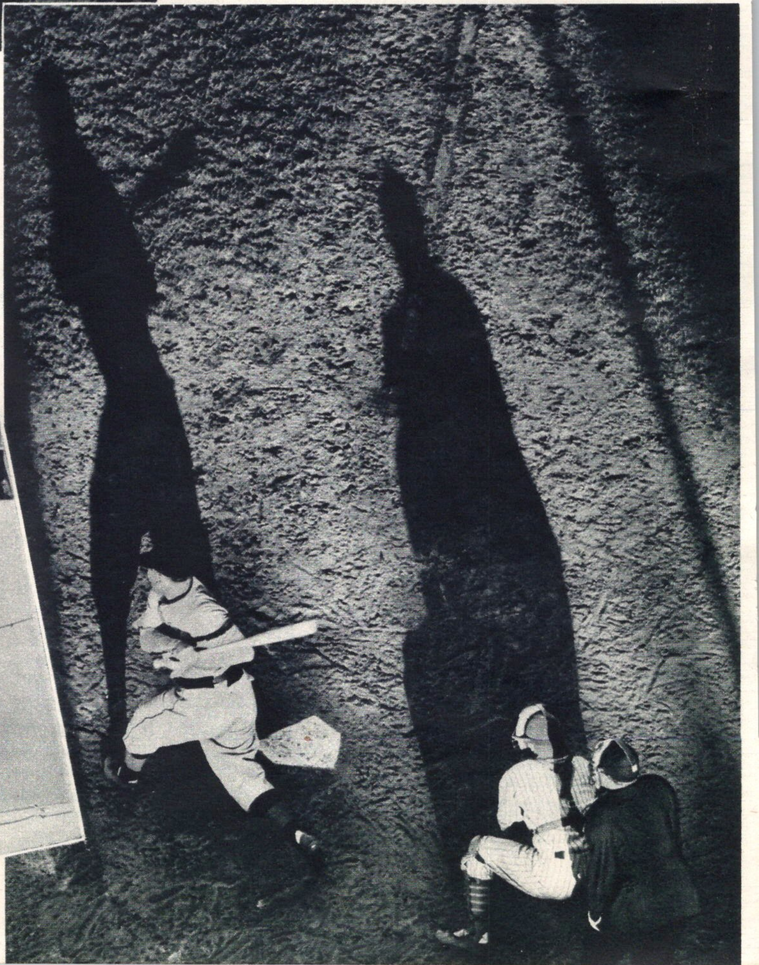
In this series the same four lenses were used but the camera position was changed in each instance to keep the dark tower the same size. As the focal length of the lens increases, the pond in the foreground becomes smaller while buildings in the background become increasingly larger in comparison to the dark tower.

Press



News photographer Bob Glander, of Minneapolis, Minn., secured this beautifully lighted and characteristically posed shot of a South Dakota farmer at the end of a day's toil in a grain elevator at Oriska, S. D. Two flashbulbs were used for the lighting, one on an extension cord.

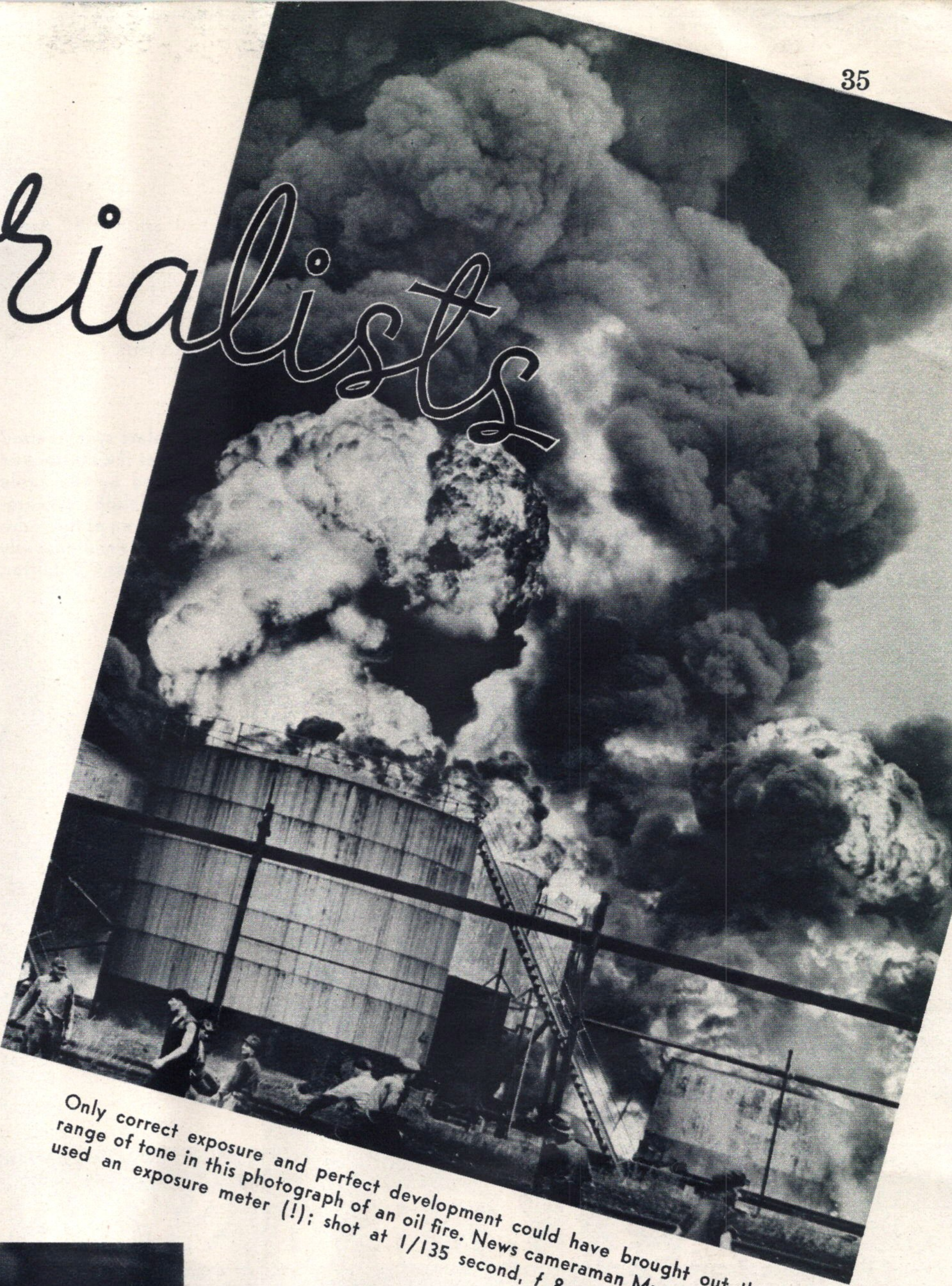
Among a crowd of news photogs covering a game in Boston, H. R. Roberts was the only one to realize the pictorial possibilities offered by an unusual angle and the long shadows across the diamond.



This shot of the president will be long remembered, both for its interesting composition and lighting, and for its characterization of Mr. Roosevelt as the "Navy President." George Skadding, who records many of the president's activities, made it.

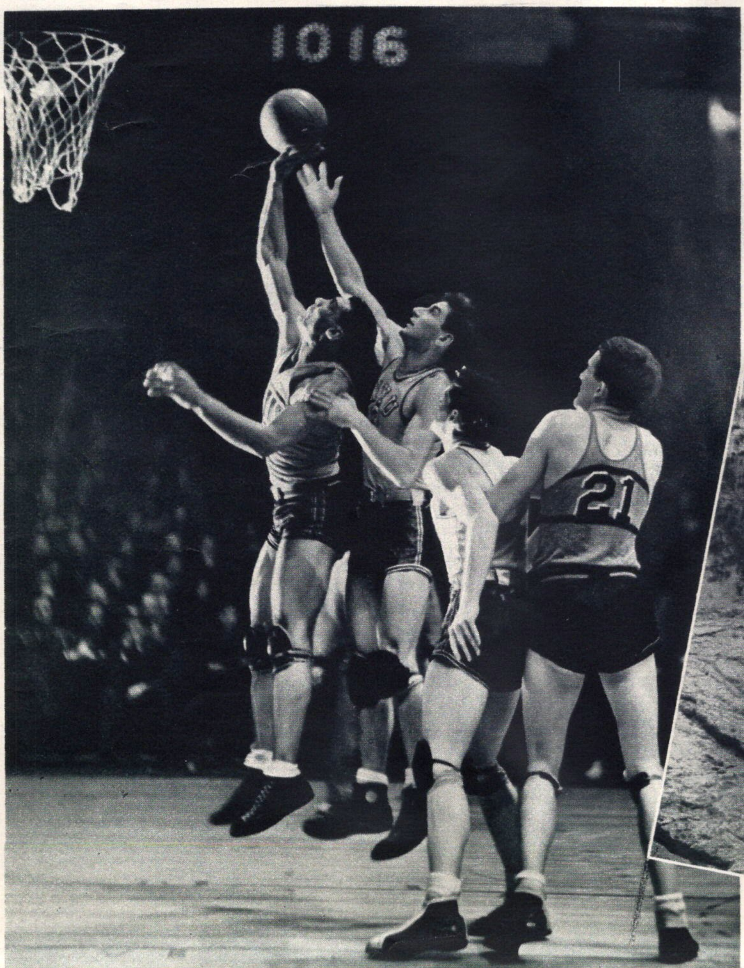
Pictorialists

EVEN on routine assignments press photographers frequently make pictures that are far removed from mere record shots and good enough for any pictorialist to be proud of. During the year 1938 these unrecognized pictorialists have been busier than ever. F. A. Resch, Executive News Photo Editor of the Associated Press, selected these outstanding pictures made by A.P. photographers on news assignments.

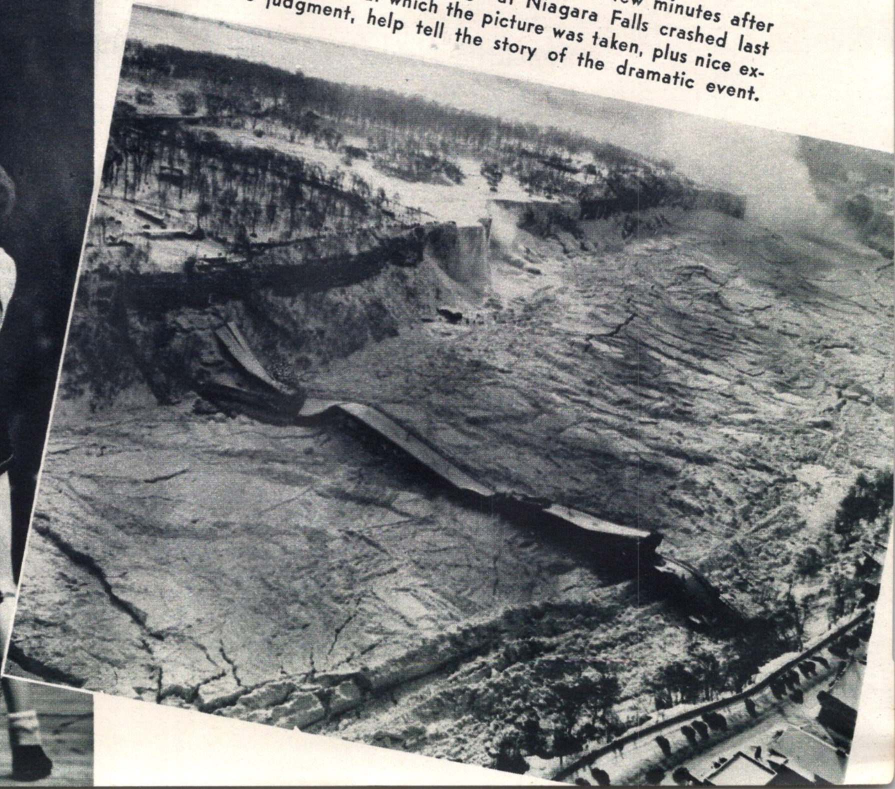


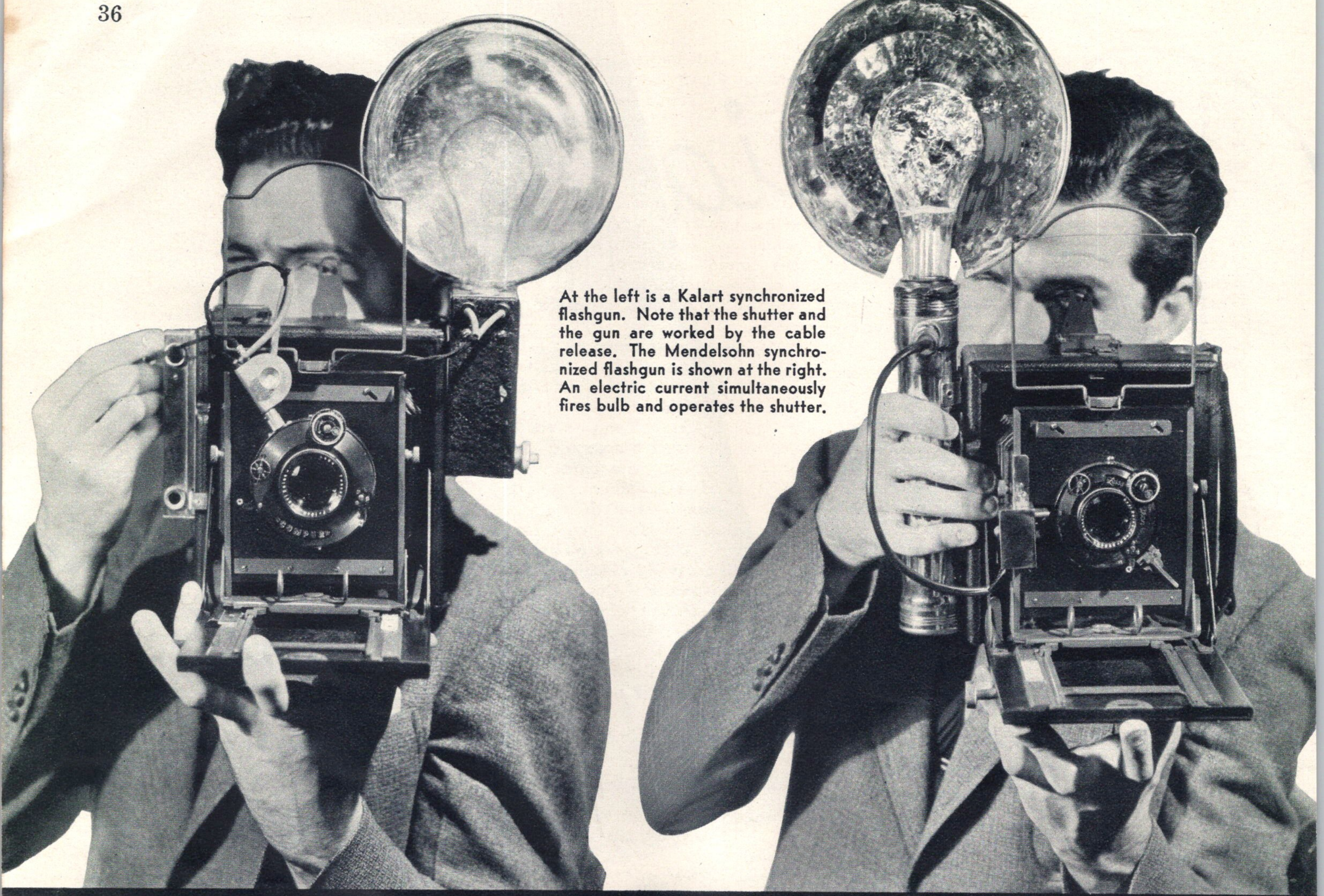
Only correct exposure and perfect development could have brought out the range of tone in this photograph of an oil fire. News cameraman Murray Becker used an exposure meter (!); shot at 1/135 second, f 8, on Superpan Press.

The dramatic lighting of this outstanding sport shot was secured with two flashbulbs. One was behind the goal on a 35-ft. extension cord and the other on Tony Camerano's Speed Graphic.



Frank Noel got this excellent aerial shot a few minutes after the famous honeymoon bridge at Niagara Falls crashed last winter. The angle at which the picture was taken, plus nice exposure judgment, help tell the story of the dramatic event.





At the left is a Kalart synchronized flashgun. Note that the shutter and the gun are worked by the cable release. The Mendelsohn synchronized flashgun is shown at the right. An electric current simultaneously fires bulb and operates the shutter.

From FLASH to SYNCHRO-FLASH

by JACK PRICE

Author of "News Pictures," etc.

The little known story of the evolution of the synchronized flashgun is related by the author who was instrumental in its development from a cameraman's dream into one of the most valuable camera accessories.

THE evolution of news photography has moved forward in direct proportion to the development and application of the flashgun. The greatest steps have been taken since the advent of the flashbulb in 1929.. However, news photographers were making flashlight pictures for years before this by harnessing the light of explosive powder. The story of the development of the flashgun from the cumbersome, dangerous, open-pan instrument up to the highly efficient bulb apparatus of today is one that is all too little known.

The elementary gun, which operated independent of the camera, was common and used for years before attempts were made at synchronization. But cameramen kept crying for a gun that would operate simultaneously with the shutter. About twenty-five years ago the first synchronized powder flashgun was introduced. Known as the Multi-Speed Flash, it operated by having a multi-speed shutter synchronized to its action. While it was a step forward, it was far from satisfactory.

Beginning in about 1921, news cameramen found simpler methods for employing speed flash. All of them, however, used powder which presented dangers to life and limb. One of these early guns was known as the Imp, and utilized a two-fold method of synchronization. The shutter was operated by means of air pressure and a cable release.

Firing of the Imp was done by means of a percussion cap which was held in place by a spring just below the pan. A cocking lever was pulled down to obtain tension for firing. The powder pan was open at both ends and, as with other types, offered no protection to the operator. An air cylinder, to which a hose was connected, was attached to the side of the handle. The air hose connected with a releasing lever which in turn tripped the shutter. A spring grip secured the cable release to the handle. This release was set in motion by another lever which was forced down by the concussion of the powder explosion.

Not long afterwards the Vogel flashgun came into use, supplanting the Imp to a great extent. It also functioned by means of air pressure and used a percussion cap for powder ignition. The caps were carried in a box built in the handle. Then came the Victor, much the same in principle but different in its form of construction. It also used percussion caps.

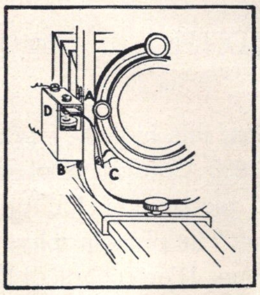
During these years the cameramen were dissatisfied. They turned from gun to gun, looking for a solution to their problems. In 1922 a group of newspaper photographers worked out a model that solved some of their problems. No one man could claim the right as sole inventor. It must be remembered that the patented guns covered all the technical points. Separately they constructed their own guns.

The results of their experiments were more or less uniform. It should be noted here, and for the benefit of all manufacturers, that cameramen were interested solely in obtaining results that would be beneficial to the greatest number. They gathered in groups at night, or on assignments, and discussed their efforts and results. At last they evolved a new type of flash synchronization.

This mechanism retained the old principle but operated by a simpler process. It eliminated the old percussion cap which was so objectionable because the noise of the exploding cap was more offensive than that caused by the exploding powder. In place of the cap they used a flint gas lighter that they purchased in the five-and-ten-cent store. This lighter was built into the handle in an upright position. The powder pan, also home-made, had a small hole which allowed the sparks from the flint to ignite the powder.

There were two methods of shutter control. Some of the earlier models were made to use the cable release but the later types were almost exclusively built to operate with air compression. The mechanism was quite simple. The pan had a shank which, when forced down by the concussion of the powder explosion, caused a pressure in a cylinder. The air thus forced through the hose worked the smaller cylinder attached to the side of the lens board. This small cylinder had a piston which contacted an arm fastened to the cocking lever of the shutter.

Probably the best operating outfits were the home-made lamps constructed by a cameraman known as "Doc" Skinner who worked for the *New York American*. He had a small machine shop in the cellar of his home where he made guns for the boys at cost. "Doc" took great pride in making his lamps and the photographers were appreciative of his efforts. Of course there were some cameramen who preferred to build their own guns, but in principle and style they were all about the same.



The real dangers in handling the old flashguns occurred in hasty reloading. Many cameramen were hurt while loading a hot pan. News photographers are forced to work swiftly. One picture after another must be made on numerous assignments. Powder was carried in glass bottles. A few tried metal cans. This they found hazardous, because a number of the containers blew up from sparks caused by friction when removing the lids.

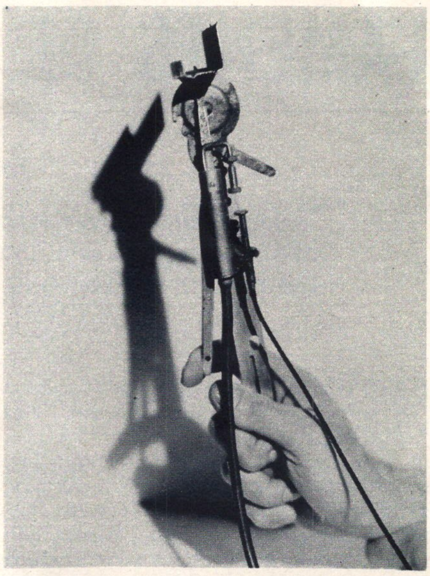
Perils existed not only for the operator but also for the people being photographed. On more than one occasion, the old powder flashgun set fire to draperies and clothing. The pictures of individuals were always a source of annoyance to art editors who hoped that cameramen could keep their subject's eyes open. The slowness of the powder flash was to blame. Closed eyes meant retouching negatives, art work on prints, and loss of time on a big news story.

The next development at this time was the introduction of smokeless powder. The cameramen were elated. It meant the taking of more than one picture in a room, with no time lost in waiting for the smoke to clear, as with the old style magnesium powder.

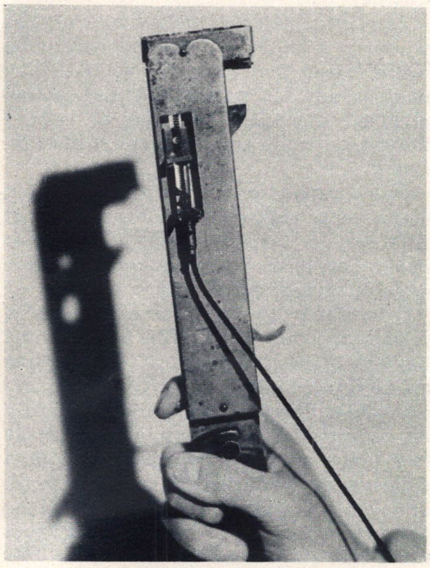
Slowly, throughout the years, little refinements came along. News photographers are busy men and could not devote the time they might have wished to in developing their equipment. But gradually new ideas were advanced and tried out in actual practice.

Early in the winter of 1929, with the aid of my staff, we devised a magnetic type of synchronizer. It was crudely made but effective. It was a simple piece of mechanism, consisting of an electric buzzer which had two small coils and a standard armature. After much experimentation it was found necessary to remove one coil and strengthen the spring. An extension was soldered on the arma-

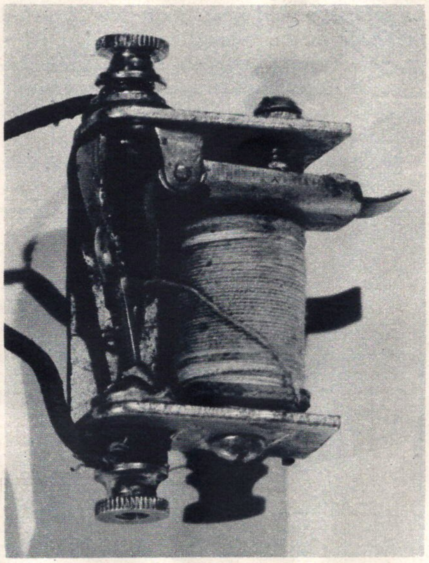
(Continued on page 91)



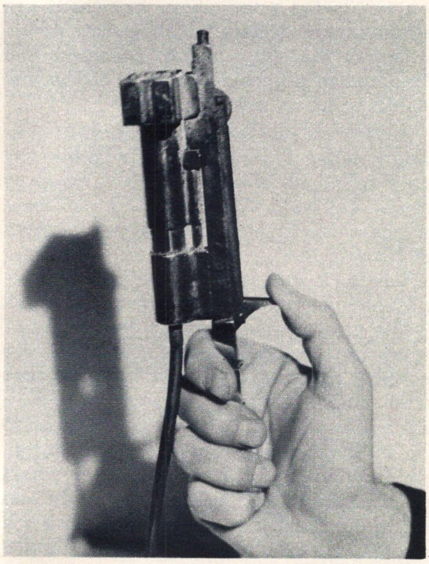
The Imp powder flashgun was one of the first attempts at flash synchronization.



The Vogel synchronized flashgun used percussion caps to ignite the flash powder.



The first electric type of synchronizer, made by the author and his staff in 1929.



A step forward was Doc Skinner's gun in which a flint ignited the flash powder.

LAMENTS OF A FREE-LANCE

by J. W. McMANIGAL
Agricultural Photographer, Horton, Kansas

The well-known free-lance photographer complains of the complete anarchy of prices and practices in the picture market, and quotes concrete evidence.

SUPPOSE, when you buy your next camera, you tell the salesman, "This camera will have quite minor use; in fact I want to use it only for a few inside shots on our wedding anniversary, so instead of the $150 you ask for it, I will instruct our accounting department to send you a check for six dollars, which we consider quite good pay under the circumstances. The filters and other gadgets, of course, will be included in this payment."

After brushing the dust off your clothes where you landed on the sidewalk, you could reflect that after all, while selling photographs for publication and selling photographic equipment may be related industries, trade practices are quite different.

Photographs for publication are sold almost universally without any regard whatever to profit, cost of production, or any other basis comparable with other manufacturing and selling.

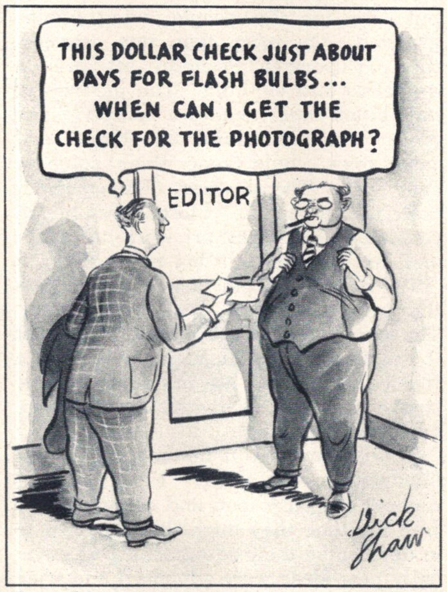
Often, and especially for editorial use, photographs are sold by free-lances at the buyer's price, the same as manuscripts are sold to an editor. There are so many exceptions, however, that this can hardly be accepted as a general rule, and the free-lance photographer, dealing with a wide variety of outlets, is almost always at a loss to quote prices which will be just and reasonable to the purchaser, yet bring him full return for his work.

My correspondence files have many letters which indicate potential buyers were in danger of apoplexy when quoted prices on prints for publication, but there are just as many letters which give faint indication that the writer considers me "tetched in the haid" because of the low value I put on my own work.

And there you are. Personally, I never know, when I quote prices, whether the correspondent is going to drop dead or laugh out loud. Frankly, I have come to the conclusion that, either way, it's all right with me.

For the business of free-lance photography, selling photographs for publication, is the most insane thing, as far as consistency in prices is concerned, that has ever come to my attention. For the most part it is a buyer's market; the most common exception to this general rule seems to be in the case of "big name" photographers whose reputation has put them in such an enviable position that they can ask quite high prices for all of their work *and get all the business they can handle.*

If photographs for editorial use do have anything resembling a standard flat price, it might be considered three dollars. Yet I would hesitate to say that three dollars, or any other figure, might be accepted as a standard price; five dollars is probably just as common as three.


THIS DOLLAR CHECK JUST ABOUT PAYS FOR FLASH BULBS... WHEN CAN I GET THE CHECK FOR THE PHOTOGRAPH?
EDITOR
Dick Shaw

Three dollars is what newspapers usually pay for news shots, and for such purposes is always too low. Three dollars is often paid for editorial use of pictures by magazines, house organs, etc., and this, while still far too low, is probably more consistent. The news shot, if available at all, should always be worth far more than a photograph made and sold in leisurely fashion, and which might be sold time and time again over a period of years as an "evergreen" stock photograph. Syndicates seem to sell even this type of stock photograph for a minimum price of $10, but cut the price in half when a credit line is given.

Newspapers demand speed, speed, speed, and a good shot today is trash tomorrow. Fast work in processing, fast and expensive delivery of prints, negatives or undeveloped exposures, Johnny-on-the-spot action in getting the shot in the first place. The free-lance news shot usually depends wholly on luck, for news shots which permit advance preparation are always covered by staff men. So the free-lance photographer will find newspaper markets minimum pay, but most exacting in their requirements, and often unreliable in the matter of answering correspondence and in paying for material used.

The free-lance photographer who sells prints to a newspaper or news agency for three dollars is being quite generous. If the subject is something they want at all, it is worth far more, because it usually cannot be duplicated at any price. It saves the newspaper the expense of sending a staff man to the spot, and staff men cost money. They are also quite liberal in the use of films and flash bulbs (as the free-lance must be, also) so that the print the newspaper is willing to pay you three dollars for probably would have cost that newspaper nearer $25, if they could have secured it at all.

In markets other than newspapers, there seems to be no top limit on the price that photographs of exceptional quality will bring *if the right market is reached.* Likewise, there is no bottom limit, as the strange case of Mr. "F" illustrates. "F" made a dandy series of photographs which he sent to the manufacturer of some of the equipment used in making them. This manufacturer had no use for them, but showed them to the advertising manager of a New York business institution, who wanted to use them in advertising. So he wrote Mr. "F," explaining how he wanted to use the photographs:

"As you have already experienced the pleasure of making these, I know you feel adequately repaid for the trouble and expense you have gone to, and will therefore be glad to have us use them for this purpose without charge. We would not, however, want to use them without full legal releases from all models, and are therefore enclosing for your convenience some blank forms which please have signed by each person shown in the photographs, or their legal guardian, in case of minors."

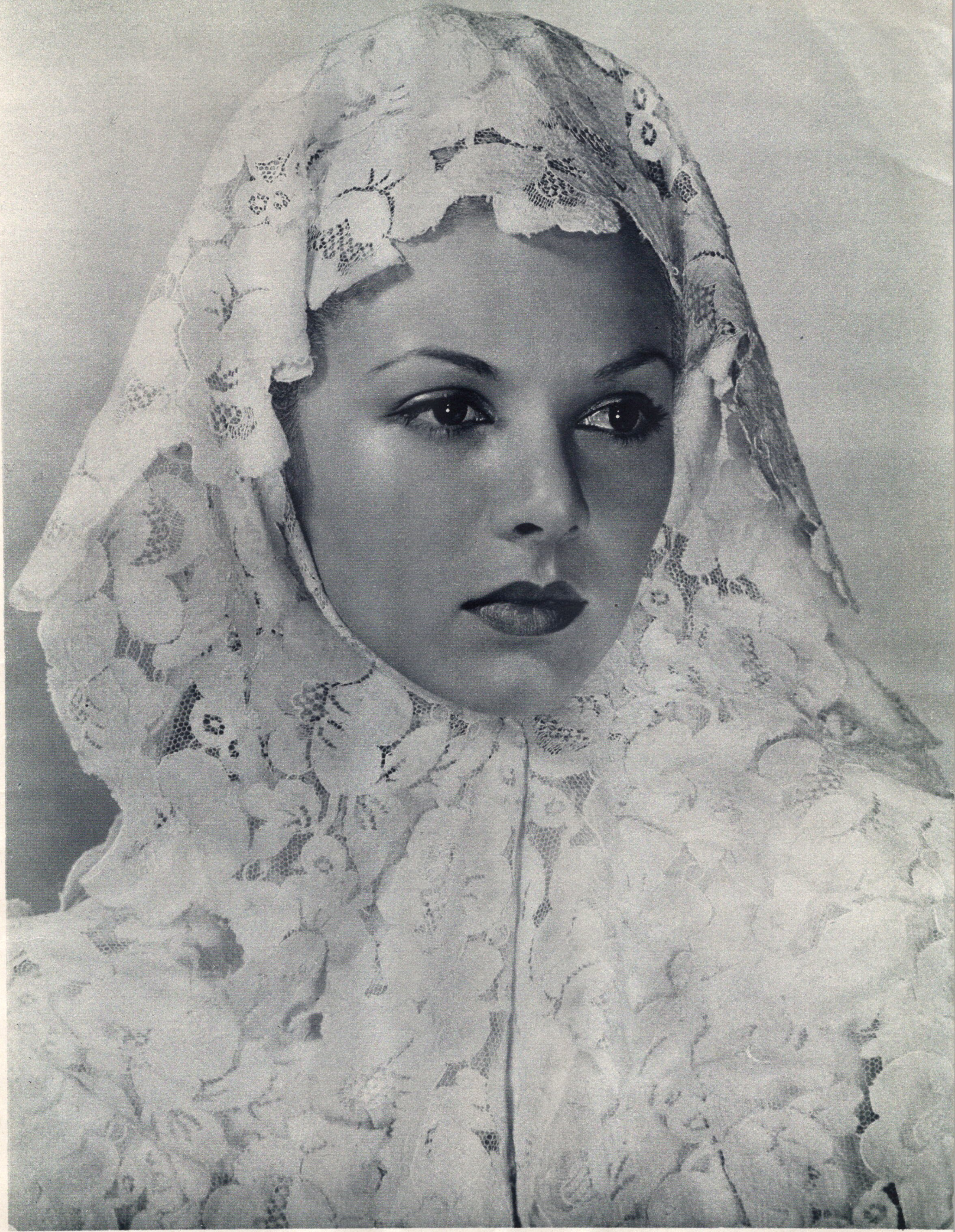
Manufacturers of farm machinery have

(Continued on page 92)

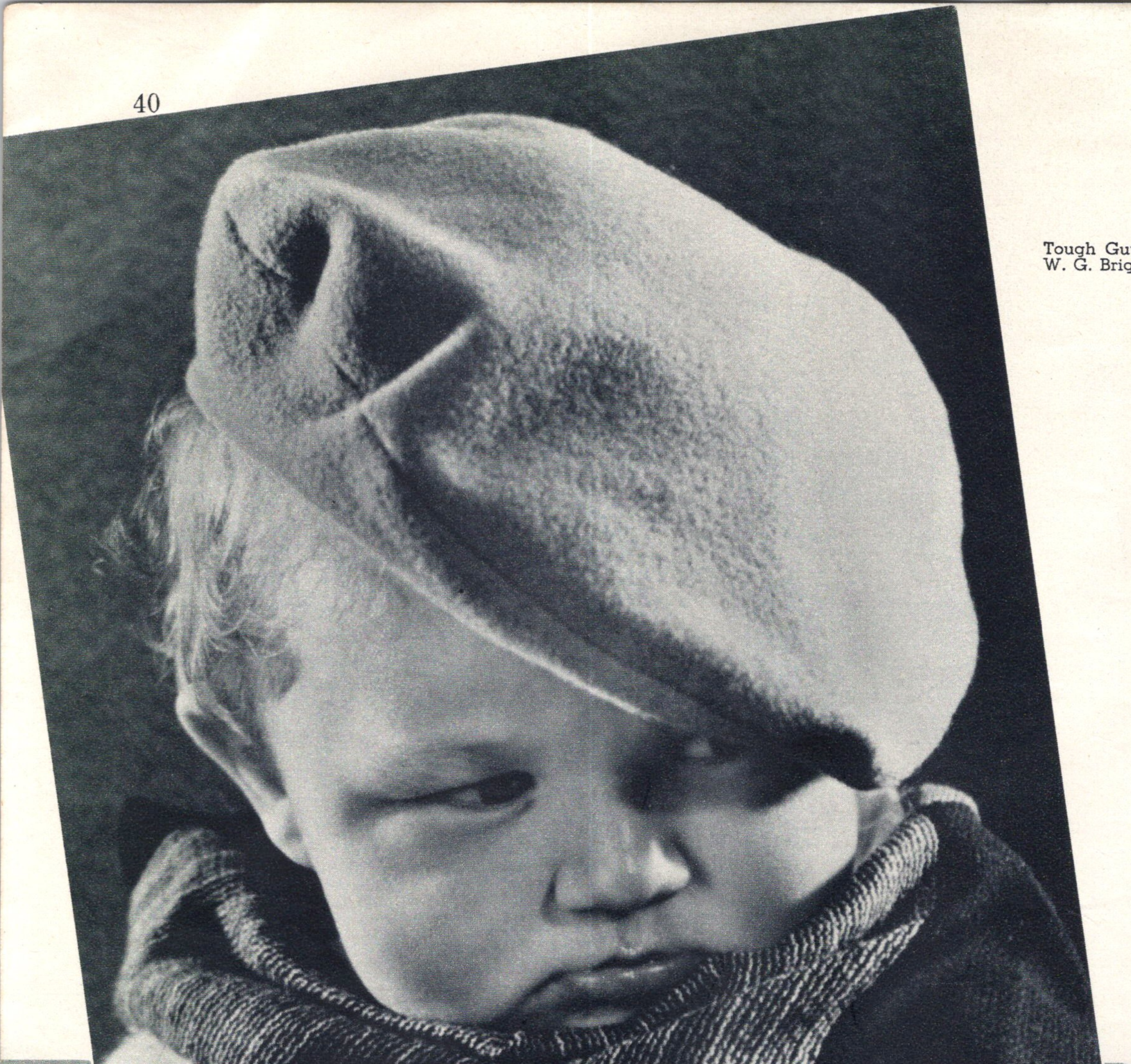
Picture of the Month (opposite page)

JUDITH . . . . by John Hutchins

Never refused by any salon, this high key print of rare beauty was reproduced in the 1938 Catalogue of the Royal Photographic Society—a high recognition for photographer John Hutchins, a mere "beginner" in photography, whose story appears on page 24 of this issue. [For Technical Data see Page 74]



JUDITH by John Hutchins



Tough Guy . . . . . by
W. G. Briggs, F. R. P. S.

Top of the World, by
L. W. Offord, F. R. P. S.

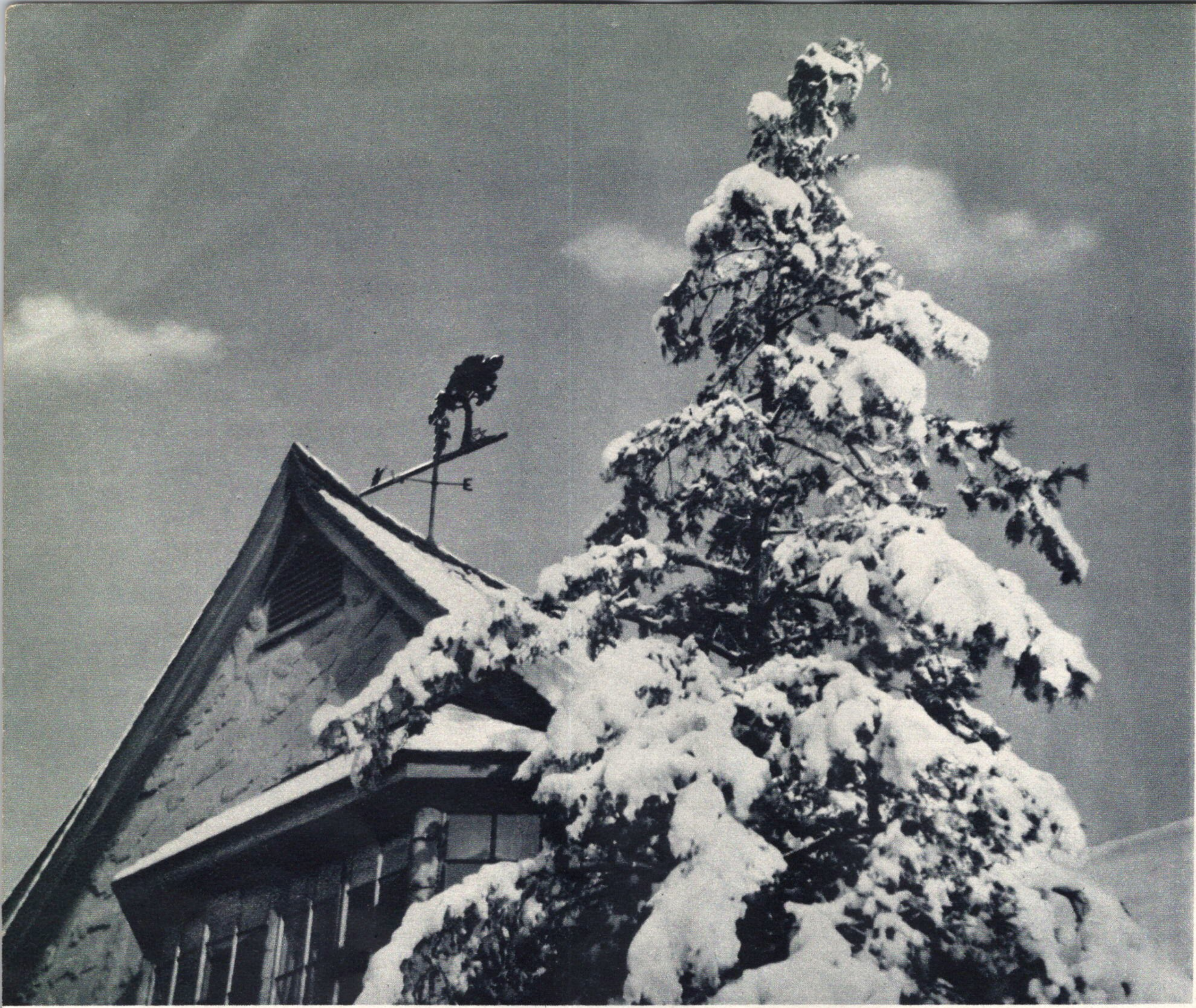
Bubbles . . . . . . by
W. G. Briggs, F. R. P. S.

Sacred and Profane, by
E. Heimann, A. R. P. S.

R. P. S. EXHIBIT

These pictures represent a selection from the exhibit of the Royal Photographic Society of Great Britain, at present in this country under the auspices of the Oval Table Society.

(For Technical Data see page 74)

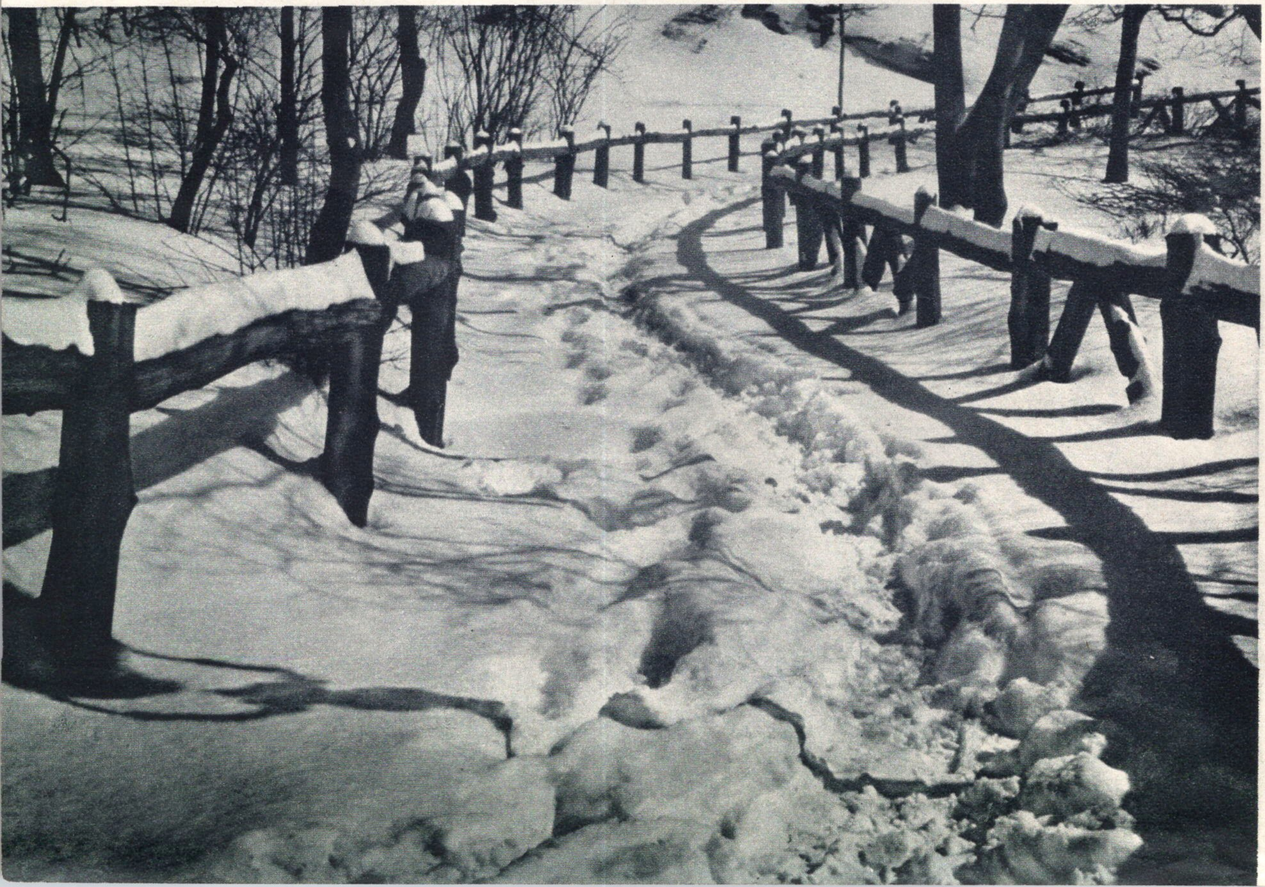


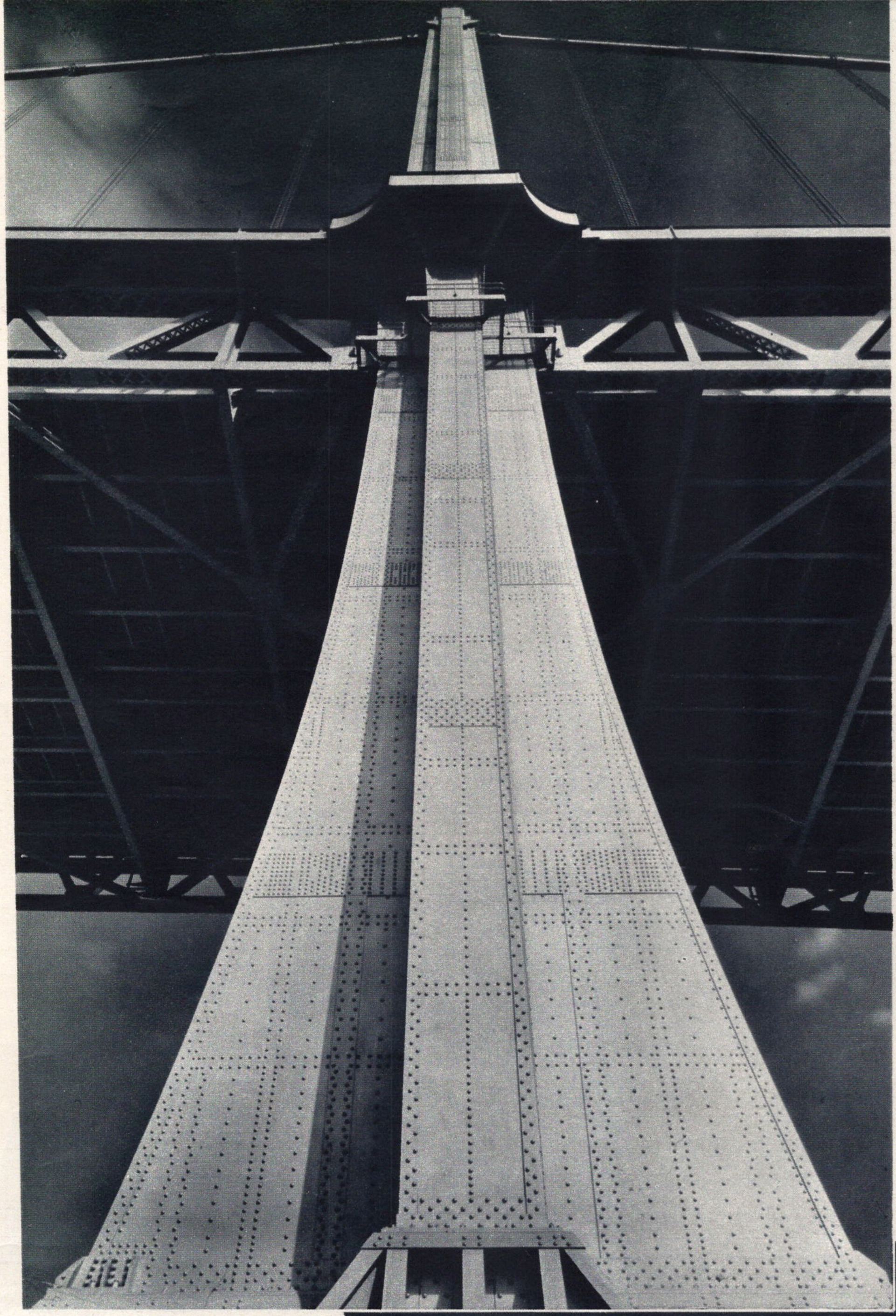
THE CHARM OF WINTER

WINTER

Repeating triangular motifs and sweeping curves form the pictorial basis of these excellent studies in snow texture and winter atmosphere by Bernhard Benson of Great Neck, L. I.
(For Technical Data see page 74)

THE ROAD HOME





Triborough Bridge........by
Ben Schnall, New York City.

BRIDGES

When looking for subjects that express power and the romance of human progress, remember bridges. They are as photogenic as babies; as impressive as a towering mountain range.

(For Technical Data see page 74)

Nocturne ....by
S. Sesolo, Stanmore, Australia.

Sam

the cat became quite famous since photographer Edward Quigley of Philadelphia, Pa., made this series of excellent studies and assembled them in the book "Sam" (published by Stackpole Sons).

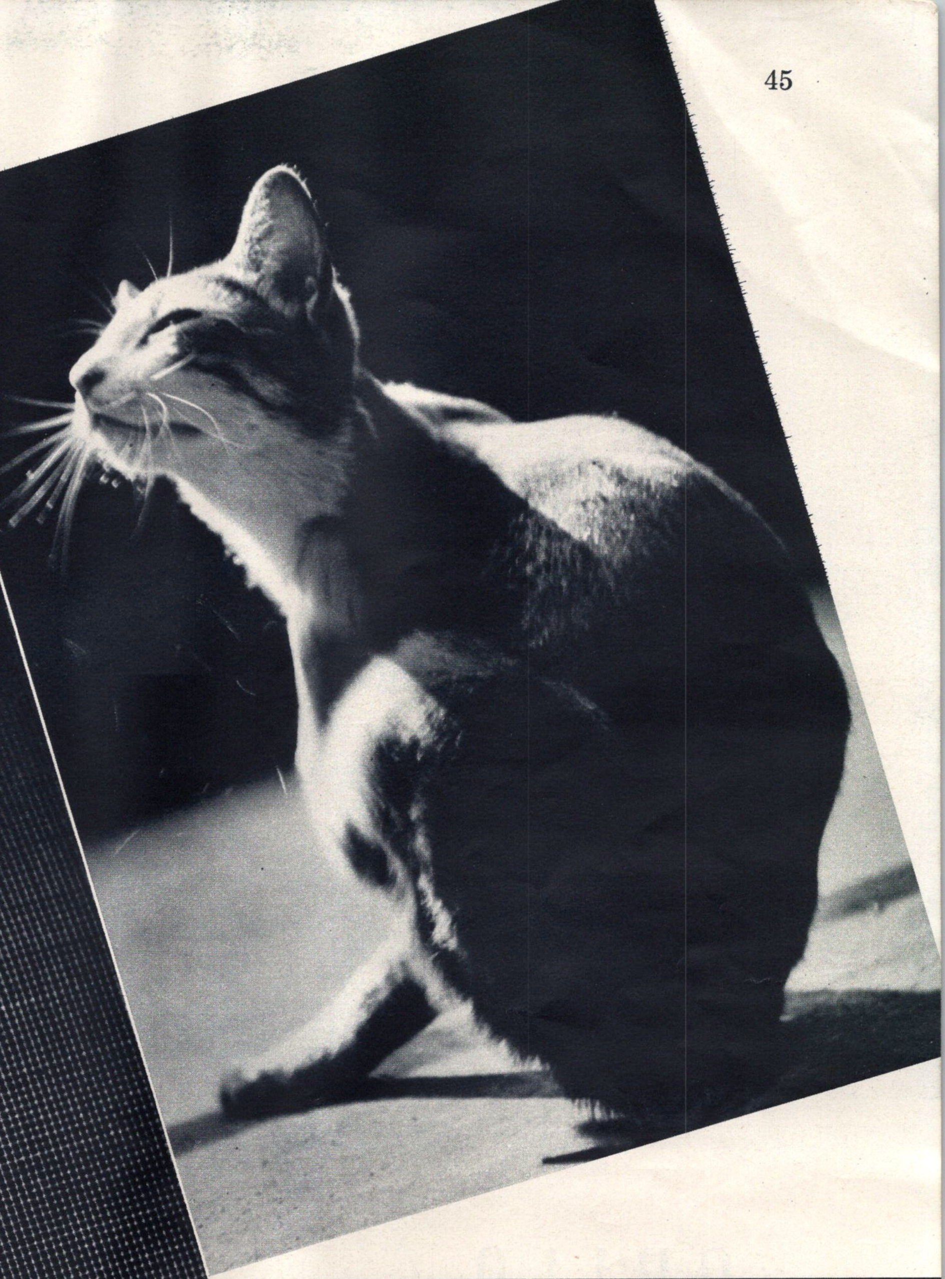
(For Technical Data see page 74)

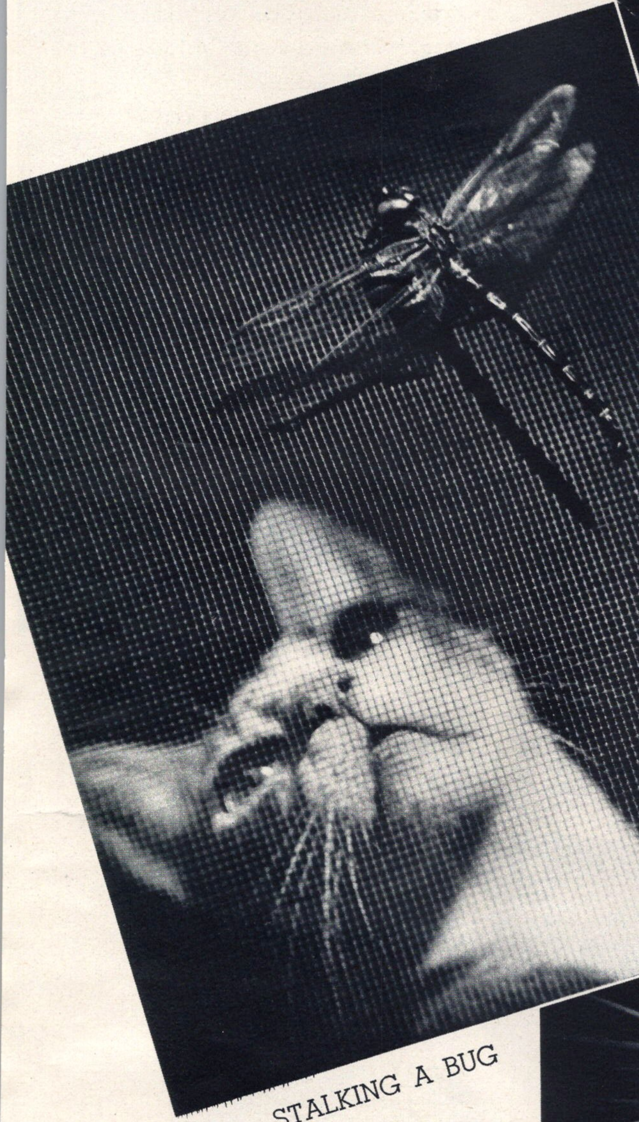
WONDERMENT

WHO'S THAT?

BACK UP

MAKING THE FUR FLY





STALKING A BUG

ANGRY

GULLS

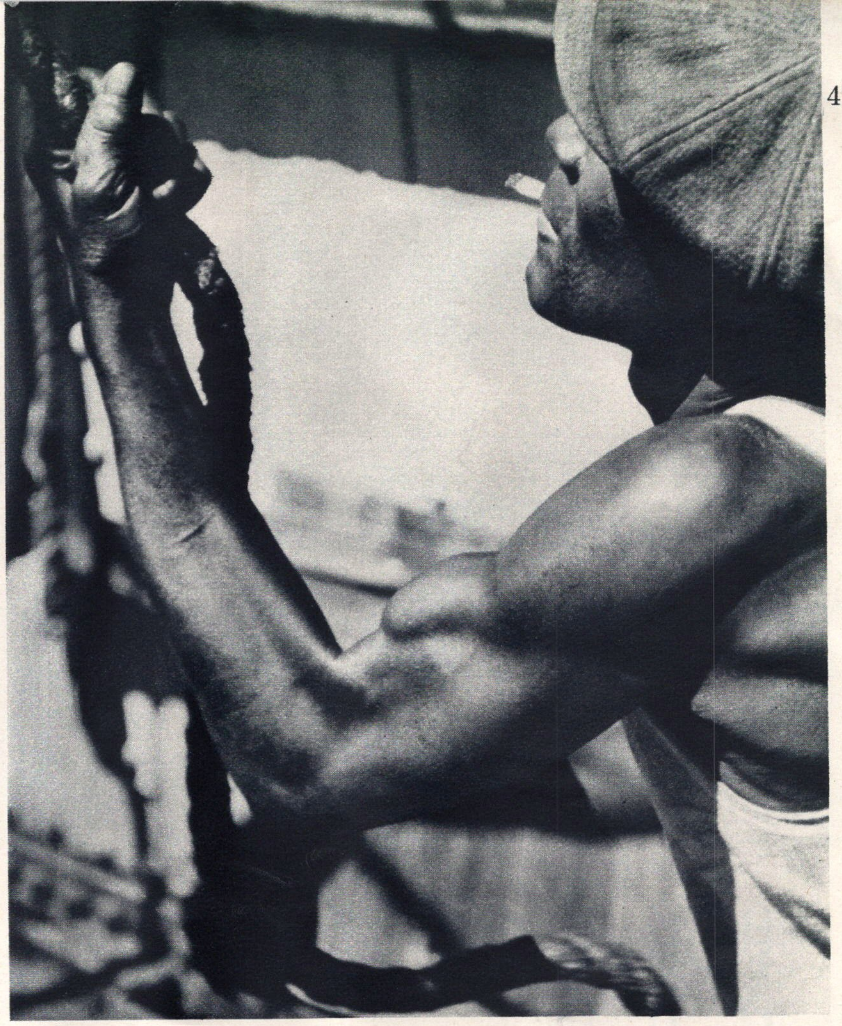
Widely different techniques were used by Bernhard Benson of Great Neck, L. I., to picture the semi-silhouetted trio of gulls and by K. Guther in his closeup of a bird in flight, yet both succeeded in packing their pictures with drama.

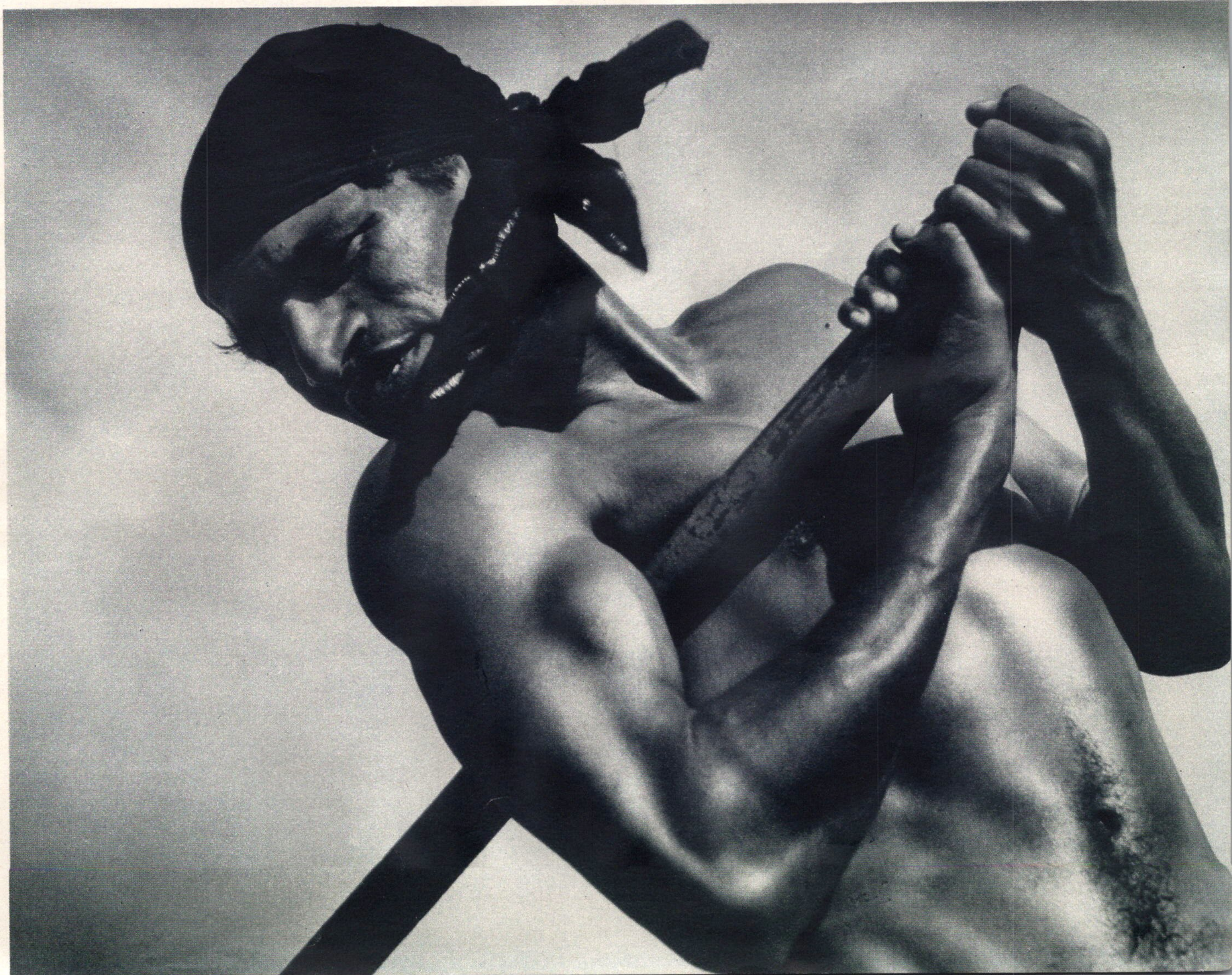
(For Technical Data see page 74)

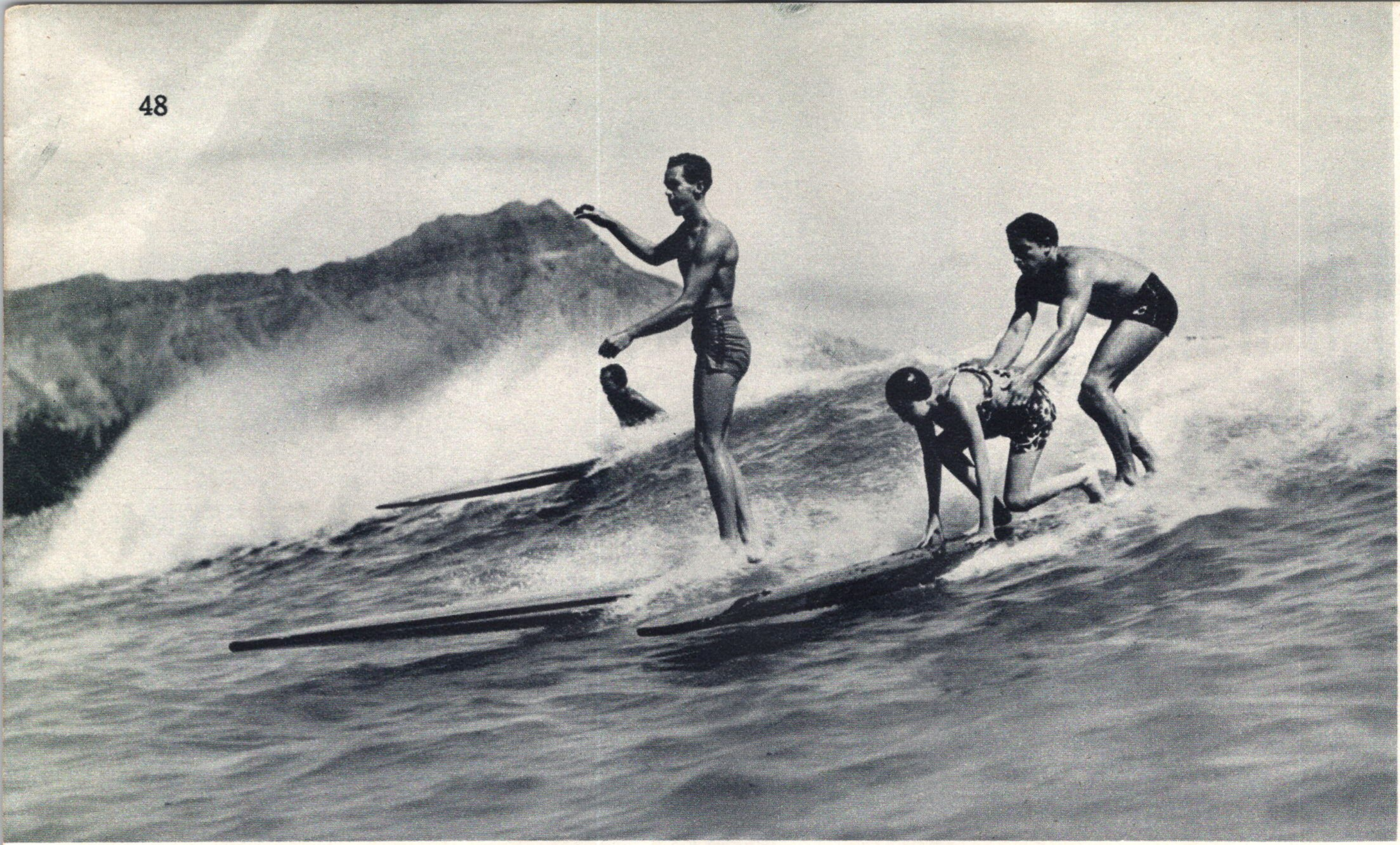
MUSCLE

Good studies of the male body are rare. H. M. Weis of Pensacola, Fla., caught his "Stevedore" with a candid shot from the hip, while S. K. Koparkar of Poona, India, carefully oiled the bronzed body of his "Boatman" to capture more light.

(For Technical Data see page 74)







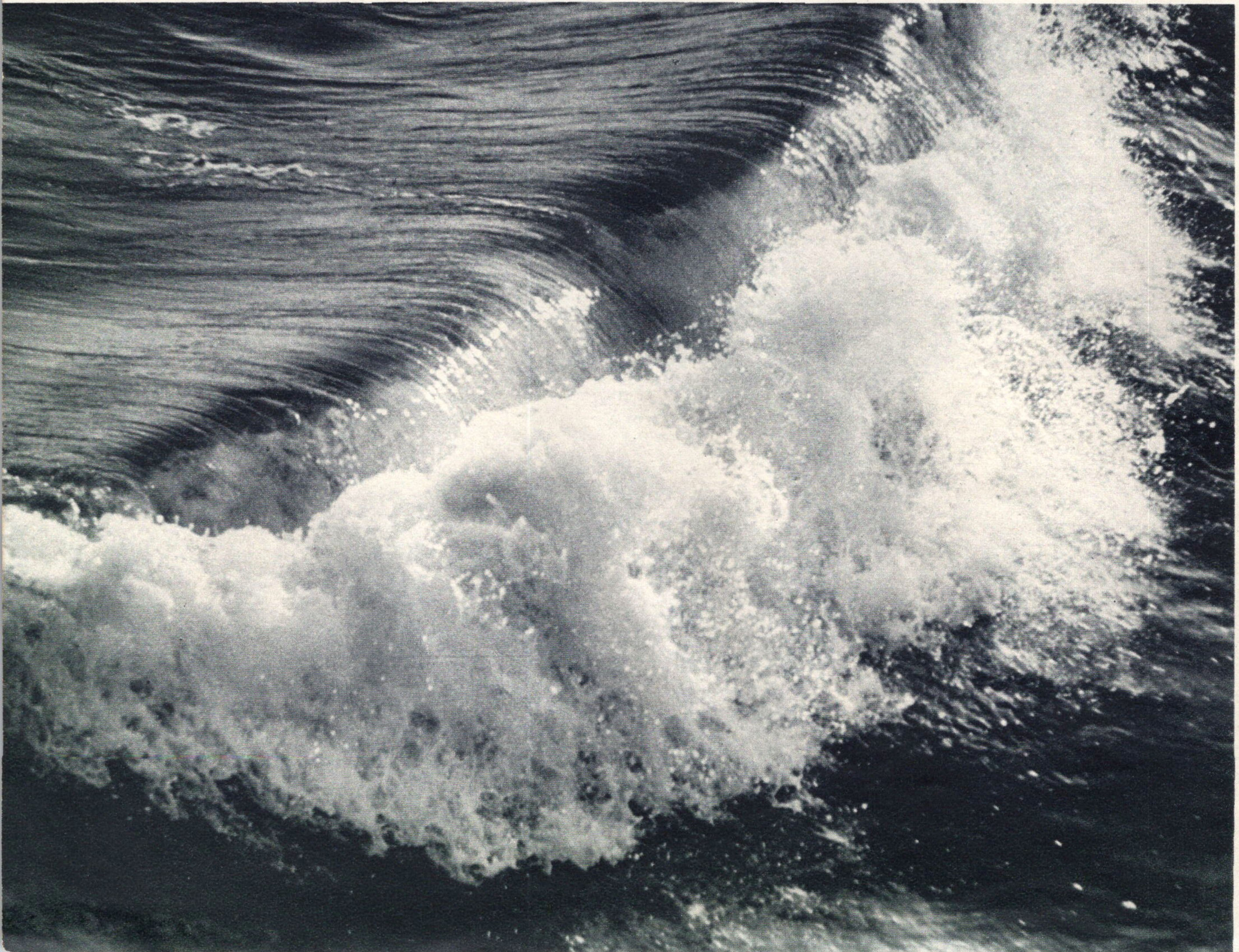
The Queen's Surf ....by
M. Arthur Robinson, Honolulu, Hawaii.

SURF

To photograph a single wave and make a picture of it is perhaps even more difficult than to operate a camera successfully amid the mountainous surf of Hawaii.

(For Technical Data see page 74)

Breaker ....by
Werner Stoy, San Francisco, Calif.



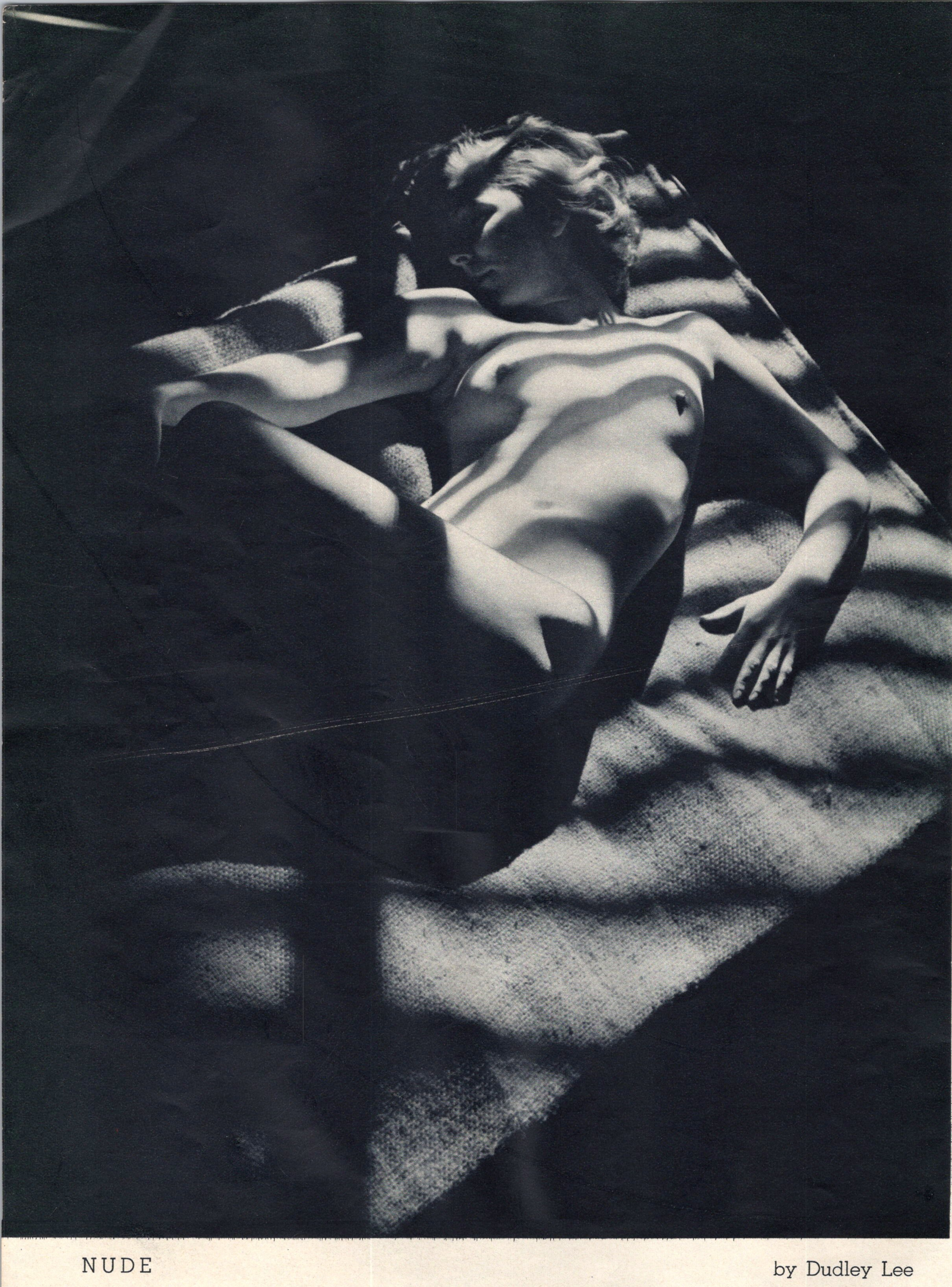
SENTINELS

By silhouetting single figures in their lone majesty against a remote background you lend them an air of drama and symbolic meaning.

(For Technical Data see page 74)

War Thunder ....by
Joseph Margraff, Chicago, Ill.

The Witch Tree.................by
Bernhard Benson, Great Neck, L. I.



NUDE

by Dudley Lee

KARL FREUND

Candid Cinematographer

Few men can shoot a movie scene so realistically that you're unaware it's just a picture. This story tells how Freund does it.

by WICK EVANS

Here is the man responsible for the fine photography in "The Good Earth."

A NUMBER of years ago a young European university student purchased a small still camera. As a direct result of that purchase the career of one of the world's most brilliant cinematographers began.

The student who purchased the camera was Karl Freund. Today the name Freund is known wherever motion pictures are made. For he is not only one of the top-ranking maestros of the movie camera in America and Europe, but also a writer and director.

Freund was born in Koniginhof, Bohemia, the son of a well-known business man in that city. Although educated in a military school the young man showed artistic abilities so strongly that he was allowed to enter college as an art student. As an aid to his drawing lessons, he purchased the camera mentioned before.

It was not long, however, before his interest in things photographic completely overshadowed interest in his art course, and led to his applying for a position in a Berlin studio. There he was allowed to put into practice some of his unusual ideas of photography. The war interrupted these early efforts, but he served as a signal corps photographer in the Austrian army—a position which was a great aid in his photographic career. Then, at the close of the war, he once again resumed his experiments.

He worked for a time as a newsreel photographer, but an idea with which he had been toying for years gave impetus to the beginning of a swift upward climb to world-wide renown.

The idea, incidentally, serves as good ground for this statement: *Karl Freund is one of the first candid photographers.* To further amplify the statement, his experiments in candid photography were conducted with a movie camera, *not* a still camera. This is the way it came about.

He succeeded in interesting a group of men who sponsored him in a project unlike anything ever attempted before.

He made a candid motion picture. The movie was called *Berlin, A Symphony Of A City.* The premise of the movie—and the word premise is used advisedly since there was no story or script of any kind used—was to picture a cross-section of the life of the great metropolis. The action was to take place in one day's time.

"Of course the picture had to be *candid,*" he said. "Since there was no script, no actors, no crews and settings, I did practically all the work myself. I merely took my camera wherever fancy dictated. I would shoot a street scene here, an old laborer there, or a group of children playing in a park. My idea was to trace a day in the life of the city. I wanted to show everything. Men getting up to go to work, eating breakfast, boarding trams, or walking. My characters were drawn from all walks of life. From the lowest laborer to the bank president.

"At that time there were no fast films such as we have today. But fast film was essential, so I made my own. I took the regular stock film of the type that was then on the market and hypersensitized it with an ammonia bath until it was very fast. I *had* to have very

(*Continued on page* 88)

Above: Freund discusses cameras and lenses with Wallace Beery, a miniature camera expert, as M-G-M's famed director James Whale listens in attentively.

Right: Freund focusing a sound camera. In getting continuity in one scene from "The Good Earth" he used twelve at one time.

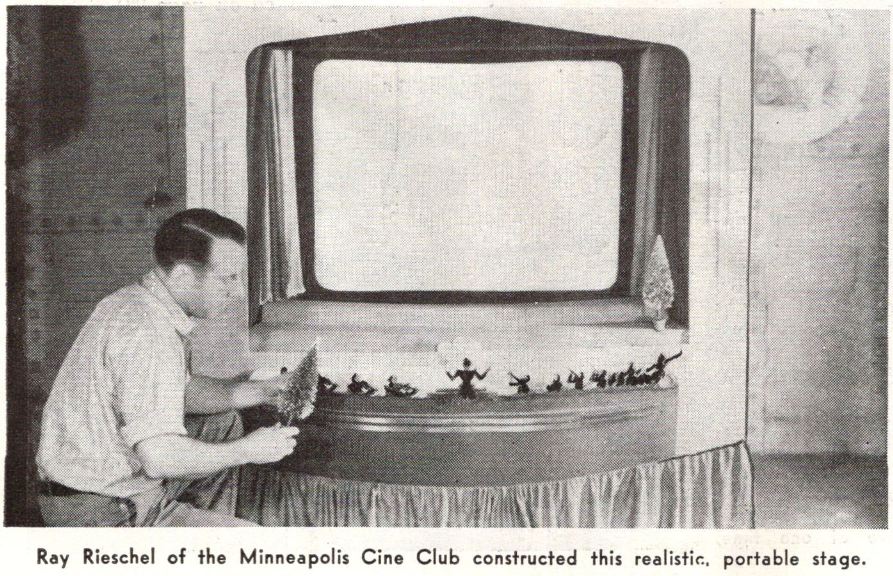
The late George Eastman's cozy home movie theater suggests possibilities for the sportsman's den.

BUILD YOUR HOME MOVIE THEATER

by ORMAL I. SPRUNGMAN

Amateur Cinematographer, Minneapolis, Minn.

Anyone can construct a home movie theater at little expense. It will add much to the effectiveness of your films and to the comfort of your audience.



Ray Rieschel of the Minneapolis Cine Club constructed this realistic, portable stage.

RECENTLY I sat in a large audience which had gathered to witness the screening of color travel films made by the official photographer for one of the steamship lines. The lecturer gave his introductory remarks, and the lights were dimmed. The projectionist clicked the motor switch, but the carefully threaded footage ran off in reverse. The audience snickered. Lights were brightened and the film rethreaded. Came night again. This time the direction was right, but the film speed was terrible. Finally, the lecturer apologized, left his stand, walked briskly back to the projectionist, gave the machine a few magic passes, and opened the show in its proper stride. Faulty screening from the start had almost ruined the effect of the entire presentation.

Just as professionals strive for smooth performances, so should amateur cameramen go to infinite trouble to see that their screenings click with their non-paying and far more critical audiences of friends and relatives. In fact, a movie maker may spend weeks and months producing a picture gem featuring topnotch exposure and pin-sharp focus, yet have his showing spoiled by incompetent projection.

The surroundings in which home movies are seen has much to do with their reception. Parlors and kitchenettes, for instance, are fine places for gab-fests, yet they are hardly suitable for picture showings. Nor is the perennial rearrangement of chairs and furniture which precedes most home projections conducive to audience enjoyment.

Most movie makers are beginning to realize this, and so the hunt is on for theater space in basement or garret. Amusement rooms and sportsmen's dens are naturals for this sort of thing. The walls are handy on which to hang travel trophies or movie frame enlargements from reels to be screened.

Still, there is something unique about having a special theater in the home, constructed and set aside strictly for movie screenings, a room complete with stage, projection booth, and regulation theater chairs. One eastern firm even specializes in the sale of plans for theater building in the home.

A decade ago, when the old Kodacolor was making its debut and amateurs were securing surprisingly good results with slow-as-molasses ortho films, my brother and I staked a claim on an idle basement corner, measuring 8 x 23 ft., which was converted into what was then believed to be one of the town's first home movie theaters. In such small quarters, nothing too elaborate could be planned, and so it was decided to reproduce inexpensively and on a small scale an average professional showhouse, with only the necessary "fixin's."

Since conditions are bound to differ and theaters must be adapted to available space, it is useless to give the exact dimensions. In our 23-foot theater, however, we built a stage and projection booth, each having a depth of 4 feet. This left an auditorium area of 15 feet, sufficient for seating from 12 to 16 adults.

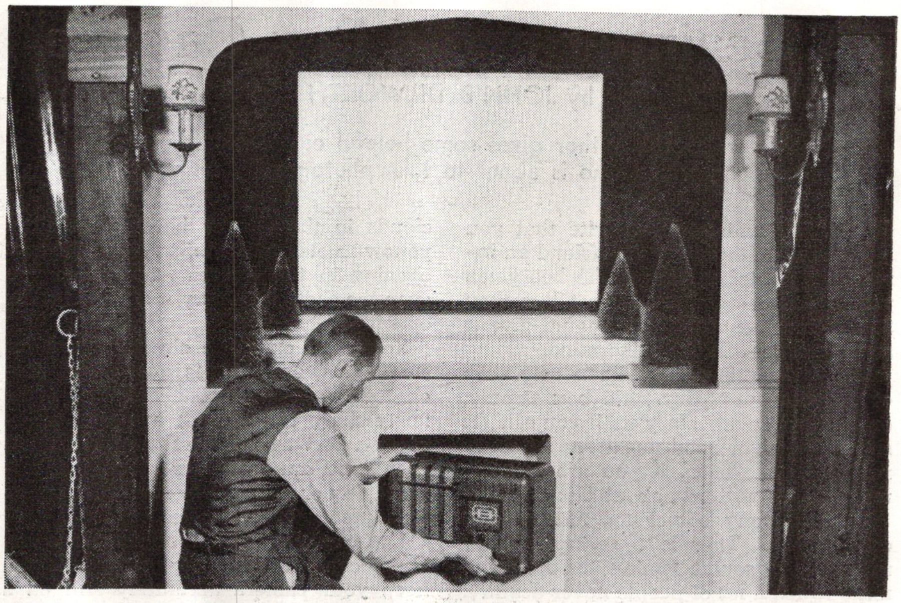
Complications arose immediately when it was discovered that one of the beam supports was located just inside the theater area. To offset this without removing the needed pillar, a hollow beam was erected equidistant from the other wall, and this formed a natural square arch behind which the stage was built.

Composition board was then cut to the desired shape and nailed to a wooden framework which made up the stage. Stage floor, footlights, and black side- and back-drapes completed the layout. A beaded screen 30" x 40" in size was mounted with L-hooks to the rear of the stage to permit easy removal. The top of the stage, invisible to the audience, was left open for possible puppet show performances in addition to the regular ciné bill.

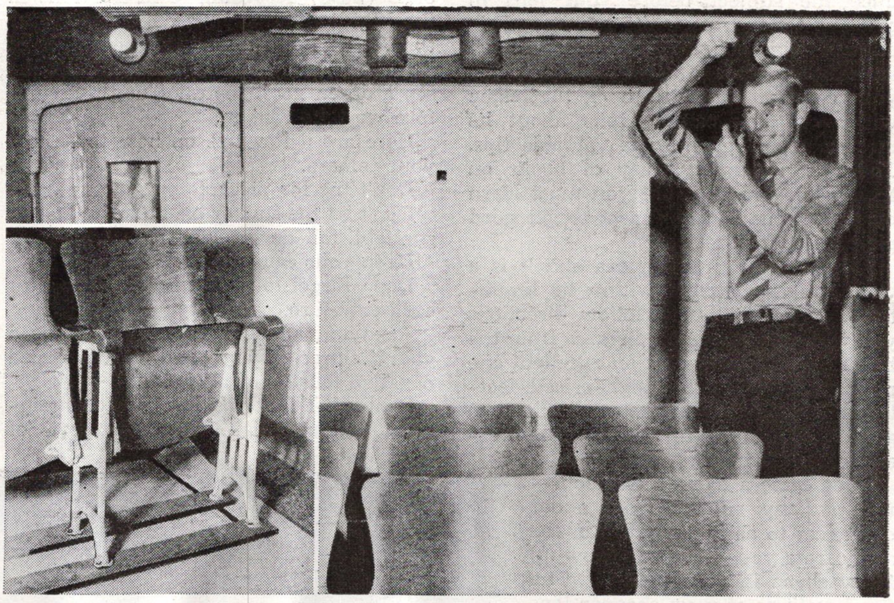
Stage properties, ranging from midget trees and houses to woodland scenes, found ample store space in the hollow beneath the stage floor. To give a perspective of great depth, two sets of artificial pine trees of two different heights were arranged at one side of the screen, with the larger trees toward the audience.

Behind a ridge along the stage front, 15 tiny footlights were backed by reflectors cut from tobacco tins. Of varying

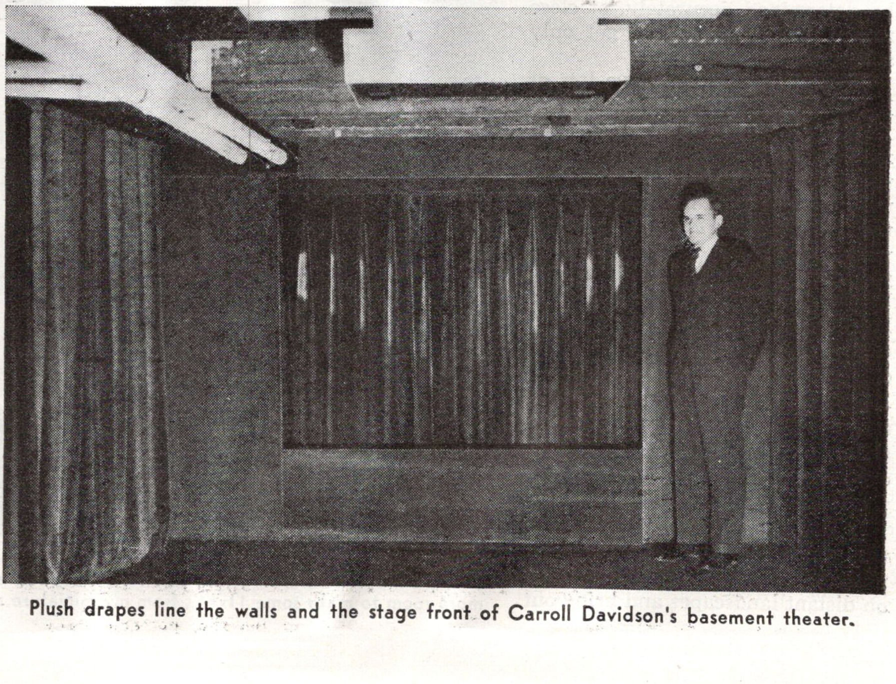
(*Continued on page 90*)



Sprungman installed a small radio, to which is connected a public address system.



Rear of the author's theater showing the seating area and the projection booth. The method of mounting the second-hand theater seats is illustrated in inset at the left.



Plush drapes line the walls and the stage front of Carroll Davidson's basement theater.

A Beginner and a Box Camera

by JOHN B. DILWORTH

In which the author gives some helpful camera hints to a young friend who is about to take photography seriously.

DEAR Bernice: You write that you expressed to your boy friend an interest in photography, and he has given you a box camera which cost less than $5.00. You wonder if you should give it away and get a *Whosis* like mine.

The answer is—*don't!* Take fifty rolls of pictures with your little box camera, or as many as necessary until you can get six out of eight good negatives on every roll you use. Then, if you are still interested, we will talk about fast cameras.

At first, don't bother too much about composition. That is a separate study involving a sound feeling for line and mass which a lot of people never acquire. Strive merely for pictures which reproduce the subject before your lens in pleasing tones from white through various intensities of gray, to black. To get such pictures you must know how to use your camera. The little book that came with your box camera tells about its mechanics and gives some valuable tips. There is a whole library of books on theory and practice, but you must learn by experience if you expect to get good pictures consistently.

I know your little camera and it is a wonderful instrument within its limitations. If you half-way follow directions you will get some good pictures from the beginning, and, possibly, an excellent one now and then. With a high-priced, fast-lens camera, it might be more difficult to get a good picture, in view of your present experience.

Your camera has a fixed focus—that is, any subject from about eight feet to as far as you can see away from your lens, will show up fairly sharp in your picture. The fixed settings of your cheaper lens insures average results. With a fast lens wide open, distance must be determined accurately, at close ranges in inches, or you get only a blur.

Of course you must have lots of light. Your lens is rated about f 11 (never mind now what that means). It admits only about one-thirtieth as much light as an f 2 wide open, and light is what makes the picture. But don't let that worry you. With any modern film you can get good pictures on any bright day, even in the shade, so long as overhead light is not shut off. In fact, in very bright sunlight on distant landscapes, and certainly when taking water and snow scenes, you should pull out the slide so as to bring the second or even the smallest opening before the lens.

In bright sunlight you can make the greens in the landscape show up in lighter tone, get sharper lines on distant landscapes and bring out clouds in the sky by holding the little yellow shield, marked *filter*, over the lens opening in the camera front while you snap the shot. Don't try it on the smaller openings.

You have only one shutter speed for snap shots, and that is about 1/25 second. That is fast enough to *stop* (take fairly sharp pictures of) a person walking ten feet away. Fast moving objects should be much further away, and approaching or going away from the camera at not too great an angle.

You can take any still object which any other camera will take, provided you keep your camera absolutely still on a solid support. Set your shutter at T (time) or B (bulb) according to instructions in the booklet, and keep it open the proper time. But this requires a knowledge of light values and exposure tables. Let me see a dozen good snapshot negatives before we take that up.

Here are a few tips on how to handle your camera.

Don't try for pictures on gloomy days.

Don't let the sun, or brilliantly reflected sunlight, fall on the lens.

Keep your camera level.

Don't forget to wind up your film after each exposure.

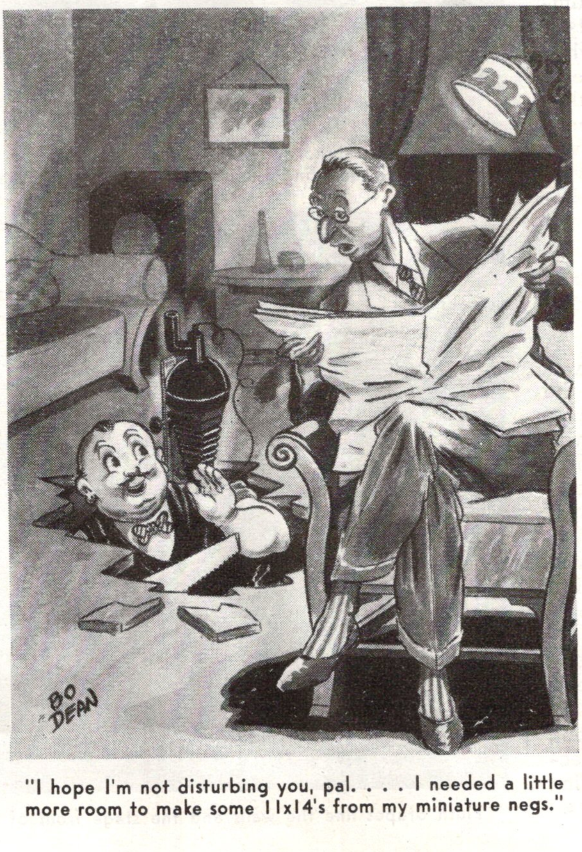
Ask your photo finisher what caused your failures. Every properly developed negative tells its own "whys."

Remember that you have better equipment and material than the experts of a few decades ago used in producing masterpieces. They knew how to use what they had. You can learn.

If you master the little box camera, you will probably want to go on to fast stuff, and your failures with that will not be so many nor so discouraging. If you get tired of it all and quit before you learn the ABC's, you will be glad that you haven't tied up a lot of money in expensive equipment, and a really fine camera *is* expensive. But I know that once you have started on this fascinating hobby, you'll never give it up. One accomplishment will lead to another, and you'll be in the same boat with the rest of us.

Yours for better pictures,

Jack.



"I hope I'm not disturbing you, pal. . . . I needed a little more room to make some 11x14's from my miniature negs."

Did You Know That—

—if you cover a small developing tank with a larger and *deeper* tank, you exclude all light and therefore can turn on your darkroom lights and go about other work.

—one of the reasons why many camera fans prefer stainless steel or metal trays and tanks is because they can be placed on a heater for bringing solutions up to temperature in cold weather.

—the little thin black tin frames, which come in all sizes of film packs, can be had for nothing at almost any photo finishers's for the asking; they make dandy mattes for contact prints or small enlargements.

—if you use several different types of tongs for handling prints, say one metal, one bamboo, and one of hard rubber, your chances of getting your developer tongs in the hypo tray will be greatly reduced.

—the little composition (something like bakelite) spoons, scoops, and funnels, now sold in the kitchen utensil department of all 5 and 10c stores, make excellent tools for dishing out chemicals. They come in several sizes and colors which make them definitely useful and easily distinguishable.

—efficient illumination diffusers can be made easily and quickly by simply pressing coarse mesh cheesecloth between two large embroidery hoops.

—the embroidery hoop is also useful in making a darkroom red light. Clamp a piece of red paper (from a package of cut film) over your drop light shade by using one of the two hoops. Use a small red globe of course. This makes a splendid lamp for general illumination.

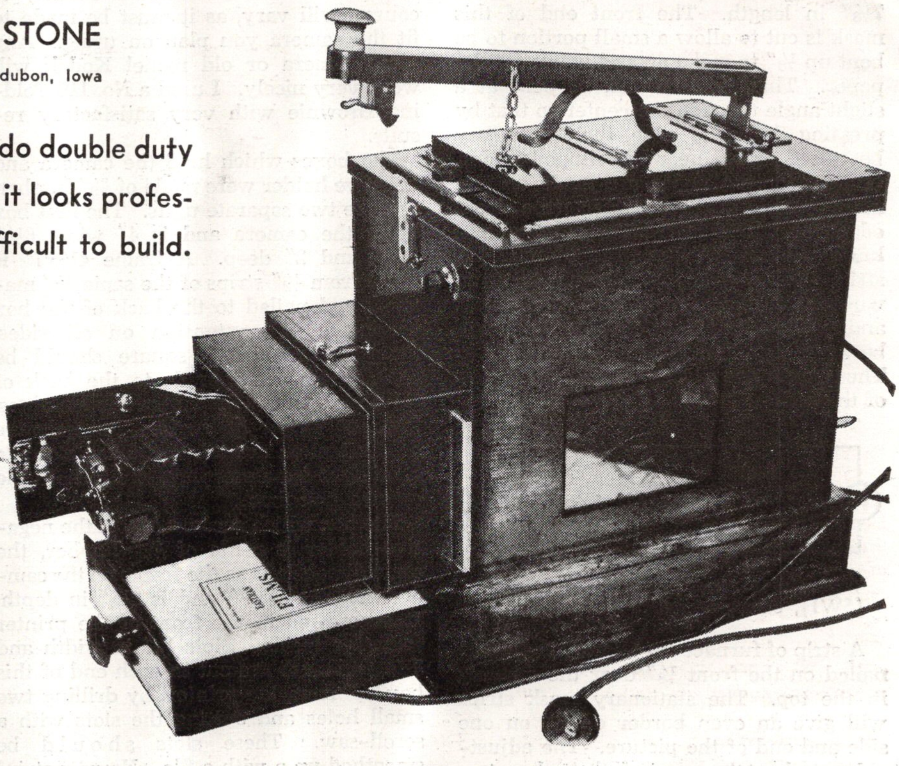
—photoflood and photoflash reflectors of the dull aluminum type can be made more efficient by lining them with aluminum leaf. First brush a coat of gold size Japan (like varnish) on the inside of the reflectors. Now apply your aluminum leaf, sheet by sheet, until all sticky surfaces are covered. Pat into contact by means of a wad of cotton or soft cloth. When dry brush off superfluous aluminum leaf. Materials are obtained at nearly all paint stores.—*Maurice Kains, West Los Angeles, Calif.*

A LOW COST ENLARGER-PRINTER

by REUBEN A. STONE

Amateur photographer, Audubon, Iowa

Here's a device that will do double duty in the darkroom. While it looks professional, it is not at all difficult to build.

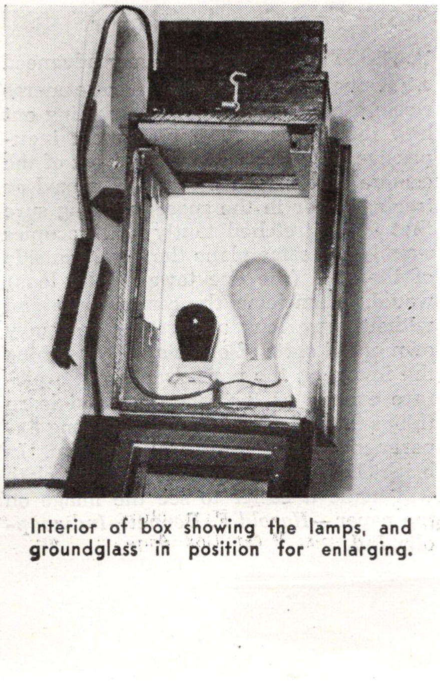


This gadget is actually a contact printer to which an enlarging device is added in the form of a camera. It is converted from one use to the other in a matter of seconds.

EVERY camera enthusiast needs a good contact printer, and often wishes that he had an enlarger so he could blow up the good ones. Here is a home-made printer with enlarger attached which I built for less than $3.00. It is easily converted from one use to the other in 30 seconds.

I began the construction, using ¼" lumber, switches, hinges, etc., from an old radio set. The outside dimensions of the printer are 11" in length, 7" in width, and 8" in height. The base was made slightly larger, 8x12½", so that it would extend ½" on both sides and back, and 1" in front, giving it a better appearance.

Two porcelain sockets were mounted on a board 3½x5". These sockets should be placed so that when two 50-watt bulbs are screwed in them they will be about ⅛" apart. The sockets should also be mounted ½" above the center of the board. A piece of sheet brass or other stiff metal ½x6", bent at a right angle 2" from the end, should be screwed to the back of the board holding the sockets. A small slot ½" in length, centered on the bottom edge of the back, is made to allow this piece of brass to slide in and out. The board holding the lamps is mounted in this way so the light may be centered for any size negative. These lights are wired so one light will burn constantly, and the other one only when turned on by a switch placed on the front of the printer. In contact printing a red bulb is placed in the socket controlled by the switch. This is replaced by another 50-watt lamp for enlarging. The inside of the printer should be painted with aluminum paint to give better illumination.



Interior of box showing the lamps, and groundglass in position for enlarging.

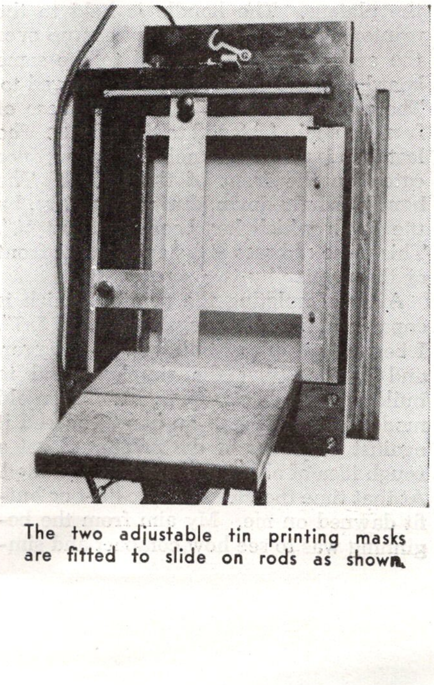
The top of the printer is 8x11" and is hinged to the back of the box, so that the overhang is all on the right side as shown. A hole 5x7" is cut in the top 1¾" from the front and 1" from the side which is flush on the box (left). This hole must be rabbeted around the edges, the thickness of a piece of clear glass, so the glass will be even with the top surface. This makes it necessary to cut the glass a trifle over 5"x7".

Next, a grooved frame, with inside dimensions of 5x7", is made to fit under the opening in the top. It should be grooved so that a piece of groundglass will be held at least 1" below the negative. This frame is held in place by nails driven into it through the top.

The groundglass should be cut a trifle over 5x7" so as to fit into the grooves. You can make your own groundglass, as I did, by putting emery powder or valve grinding compound and a small amount of water on a piece of glass, and rubbing with another piece of glass or flat steel. The glass should be washed and new powder or compound added occasionally to do a thorough job. Grind the glass on both sides, and you will have the best diffuser obtainable.

The rods on which the printing masks slide are pieces of 3/16" bronze welding rod. Holes should be drilled in the ends which are filed flat, and the rods screwed to the top with washers under the ends to allow the masks to slide freely. The front rod should be 7" in length and screwed in place, so it is ¾" from the front, and ½" from both sides.

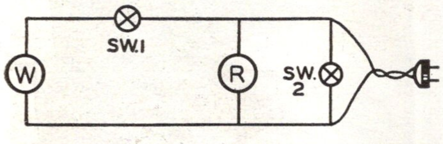
The masks are made from strips of furnace tin cut 1" in width. The easiest way to make the two movable masks is to first tin about ⅛" on one end of each with solder. Fit the end of the strip around the rod and place in a vice. The end can be fitted nicely around the rod by forcing it down with a screw driver. The small projecting tip which has been tinned should then be reheated and clamped immediately against the surface of the strip and soldered in place. Care should be taken to see that these strips are square with the rod and slide freely. Radio bind-



The two adjustable tin printing masks are fitted to slide on rods as shown.

ing posts are tinned and soldered to these masks to make adjustments easier.

The stationary mask for the left side is also made of furnace tin 1″ in width and 7⅛″ in length. The front end of this mask is cut to allow a small portion to be bent up ⅛″ to make an end gauge for the paper. This mask should be bent at a slight angle through the center so that by pressing the outer edge, the inside may be raised and a negative slipped under. Gauges for the paper are made on this mask with drops of solder (the front edges of which are cut square with a knife) placed ⅛″ from the edge of the strip. This mask is to be placed even with the edge of the opening in the top, and held by two nails with small springs between the nail heads and the mask. These nails are placed on the inner half of the mask.



Wiring diagram showing printing switch, (SW1), enlarging switch (SW2), lamps.

A strip of furnace tin 5¼x½″ should be nailed on the front ⅛″ over the opening in the top. The stationary mask strips will give an even border of ⅛″ on one side and end of the picture. The adjustable masks take care of the other two borders.

The platen on the printer is 5x7″. This is made in two pieces of equal size, 5x3½″, and hinged together. The platen assembly is also hinged to a strip of wood of equal thickness, which is held to the back end of the top by four screws. The platen is placed so that it rests against the front and side gauges. Care should be taken to see that the hinge holding the platen is raised the thickness of the felt which is glued to the contact side of it. This is accomplished by placing a small shim under the back half of the hinge.

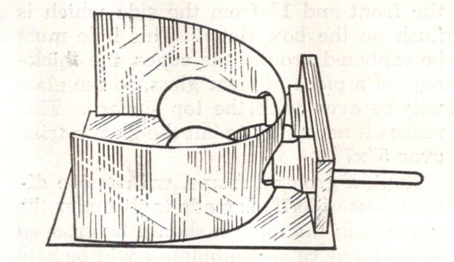
Pressure on the platen is obtained by using two strips of heavy clock spring, heated and bent to the desired shape. These are placed one on top of the other, and screwed to the handle, so that each end of the spring contacts the center of the platens. The handle is held to the printer by a hinge which is bent up over the end of it, and screwed to the same board that the platen hinge is screwed to. The platen is raised by a small piece of furnace chain fastened to the handle. The last step is placing a knob and spring door catch on the front of the handle. The handle is held down, during exposure, by the catch which has been bent out ⅛″. This piece of brass is fastened to the front of the printer by two screws.

After completing the printer, which is capable of handling negatives up to 5x7″, I began to think of building an enlarger, and decided that the simplest kind to build was the box model. Having an old model folding Kodak on hand I placed it against the front of the printer to get a rough idea of about the size box I wanted. At that time the idea of a two-in-one outfit dawned on me. My aim from the beginning was to see how compact and simple I could build it. With this in mind I began construction by building a frame box to hold the camera. The size and construction of the camera holder, of course, will vary, as it must be made to fit the camera you plan on using. Any plate camera or old model Kodak will work very nicely. I used a No. 116 Folding Brownie with very satisfactory results.

The boxes which hold the camera and negative holder were made of ⅜″ lumber, and are two separate units. The first box holds the camera and is 4″ wide, 6½″ long, and 2″ deep. A frame 4½x7″ is made from ½″ strips of the same ⅜″ material and nailed to the back of the box leaving a ¼″ extension on all sides. Strips of wood ¼″ square should be nailed with small brads to the back of this frame and ¼″ from the outside edges.

These strips fit inside the negative holder box on the printer. They serve to keep light from escaping, and to hold the camera box firm.

The box which accommodates the negative holder is made of ⅜″ lumber, the same dimensions as the frame on the camera holder, 4½x7″, and is 2¼″ in depth. It is screwed to the front of the printer from the inside. Slots ¼″ in width and 3¾″ in length are cut in each end of this box ¼″ from the printer, by drilling two small holes and cutting the slots with a scroll-saw. These slots should be smoothed up a with a file. Narrow strips of tin bent at right angles are nailed on the inside of this box even with the tops and bottoms of the slots. They make it easier to slide the two pieces of glass which hold the negative. These pieces of glass should be approximately 3¾x9″, and the negative for enlarging is merely placed between them. Small hooks and screw-eyes, top and bottom, are used to hold the two boxes together as shown.



Sketch shows detail of metal reflector (top piece removed) used in enlarging.

Before attaching the box which accommodates the negative holder, a 3¼x5″ opening was cut in the front of the printer. In cutting this hole care should be taken to see that its center is in line with the center of the two lamps. The groundglass was already attached to the lid of the printer in a grooved frame so it could be taken out and cleaned. This made it only necessary to build a similar grooved frame, 6½x8″, with inside dimensions of 5x7″, to place in the front of the printer so the groundglass would be interchangeable with a piece of plywood cut to the same size. This frame is held in place by nails driven through the sides and bottom of the printer. Care should be taken to see that the frames are made and placed so the groundglass will be at least 1″ from the negative on the enlarger as well as the printer.

I found it necessary to build a reflector to get even distribution of light on the negative for enlarging. It was made of reflector metal obtainable at any hardware store and consists of three units. Two are flat reflectors 10½x6½″, one of which is placed in the bottom of the printer and the other used as a cover for the curved reflector. The curved reflector is shaped from a piece of metal 18″ in length, 5″ in height at both ends, and tapering to 4″ in the center on top. By using a tin shears it will be found very easy to cut this reflector so that it slopes from both ends to a mark made in the center 1″ from the top. The diameter and position of the sockets should be measured, and two holes cut in the reflector for these to project through as shown in the sketch.

In making enlargements, especially big ones, it will be found necessary to either raise the enlarger or lower the easel. By nailing strips of wood 2″ in height to the bottom of the printer and nailing another base to these you will find ample room to place a very handy little drawer. That is the method I used to raise the enlarger, and I find the drawer can be used to hold the top of the reflector, negative holder, paper, etc., when making contact prints, or the red light when making enlargements.

When making the printer, a developing safelight can easily be placed in the side, by rabbeting an opening to accommodate a slide made from a piece of red paper and two pieces of glass.

This enlarger-printer has been given every sort of a test. I have found it unnecessary to remove the whole reflector when making contact prints. All that is necessary to change from enlarger to printer, or vice versa, is to take the top piece of reflector off, change the one light and the groundglass diffuser. This can all be accomplished in 30 seconds. The lights on the enlarger are controlled by a separate switch on the lamp cord. The switch on the printer must first be turned on so both lights will burn.

This darkroom accessory will be found entirely satisfactory for making quality contact prints and enlargements.—

Focusing Instructor

MOST beginners and many advanced photographers with new cameras waste a large amount of film finding out how they focus. A simpler, more inexpensive way is to remove the back of the camera and thread a piece of waxed or tracing paper in the spools, making sure that it is stretched tautly and occupies exactly the same plane the emulsion side of the film (the one towards the lens) would. Then focus the camera with and without any lens accessories you may own on all sorts of objects. By watching the image on the paper you see the picture exactly as the lens does and learn things that might otherwise take long experimenting and costly waste of film. In bright light an improvised focusing cloth will make it easier to see the image on the paper.—*Harold F. Bennett, Indianapolis, Ind.*

Mounting COLOR TRANSPARENCIES

by LARRY J. FISHER
Amateur Photographer, Beaumont, Texas

In order to properly protect your color transparencies against scratches, fingerprints and dust, they should be mounted immediately after development. The method of performing the process is graphically illustrated and described herewith.

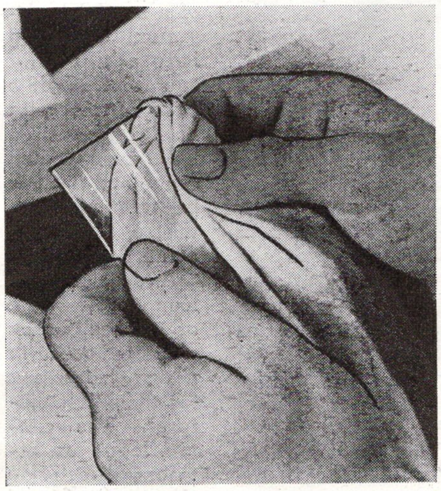


Fig. 1. The glass slides should be washed in warm, soapy water to remove all dirt and oil. Dry with a dish towel and polish with a jeweler's chamois or a linen cloth. Thereafter, touch only the edges of the slides as you are handling them.

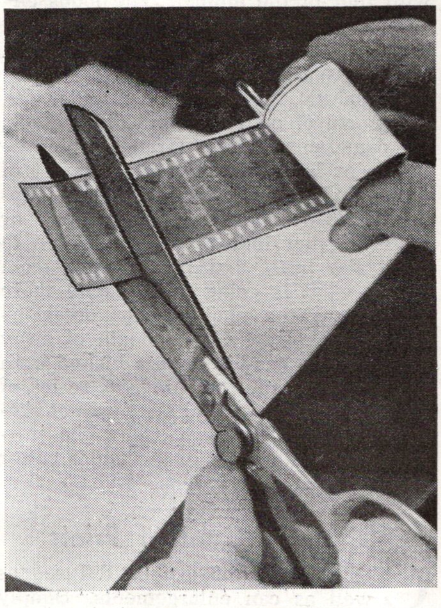


Fig. 2. Using a paper clip to keep roll from loosening, examine and cut off only one frame at a time. If the transparency is good, mount it immediately. Don't examine or cut off the second frame until the first has been properly mounted.

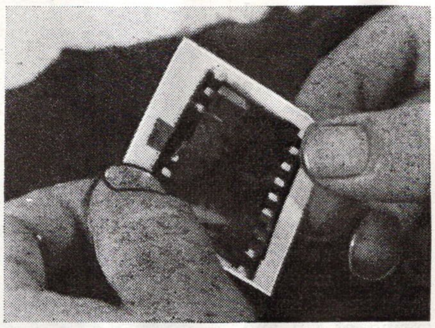


Fig. 3. Fasten the transparency to the mask with a piece of cellulose tape. Be sure that the tape is clear of the picture area and that the emulsion side of the film is facing up. The glossy surfaces of both mask and film will face downwards.

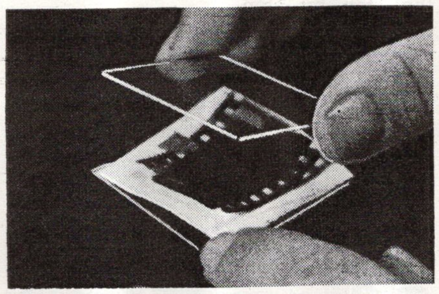


Fig. 4. The mask and film have been held in the hand during the previous operation. Now place a cover glass on the table, lay the mask and transparency on top of it and get another cover glass ready to cover it. Be sure to touch only the edges.

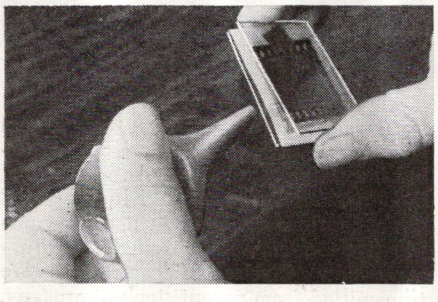


Fig. 5. Before putting the "sandwich" together, carefully blow out any small dust particles which might be on either the film or the glasses. An ear syringe will be found very convenient for this. It may be purchased for about ten cents.

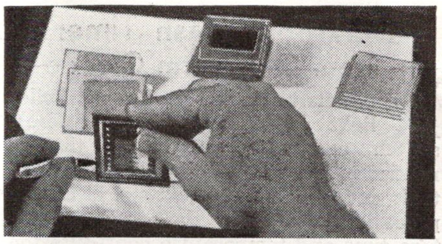


Fig. 6. Unroll about a foot of the cellulose tape and place it on the table with the sticky side up. Line up the glasses and place one edge exactly in the center of the tape. Cut the tape with a knife, bind, and repeat for the other three edges.

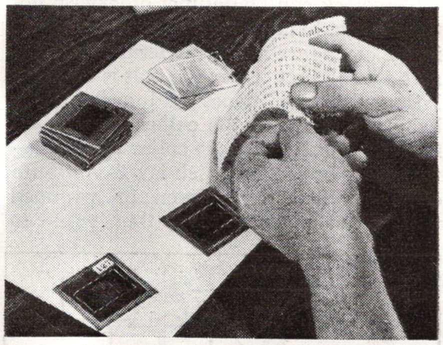


Fig. 7. Purchase a set of consecutive numbers on gummed labels. Pick up the slide with the glossy side of the film towards you, turn it upside down, and stick the number in the upper right-hand corner. It is now ready for filing.

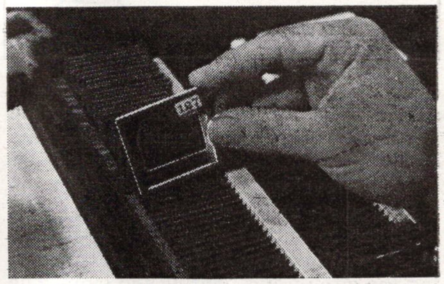


Fig. 8. File boxes, each slot numbered, may be purchased quite inexpensively from your photo-supply dealer. By all means get one. It will protect your slides from damage and offers the only practical method of keeping them in good order.

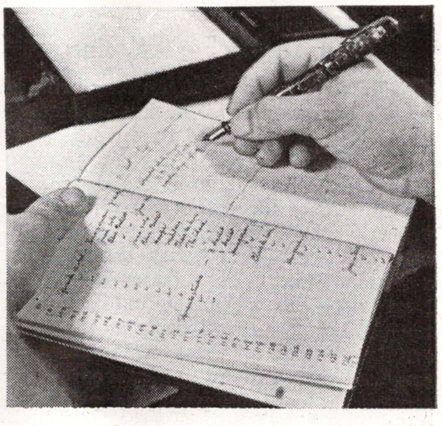
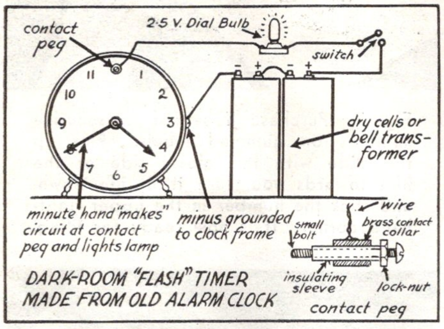


Fig. 9. Secure an index book and list scene descriptions and exposure data opposite the slides' corresponding numbers. Numbering the slides also makes it very easy to cross-index the color transparencies into their various classifications.

Darkroom Flash Timer From Old Alarm Clock

AN old alarm clock, two dry-cells, pilot light bulb and socket (radio), switch, and wire will be all that is needed to make a flash timer for use with tank development. Panchromatic film is processed in absolute darkness. Therefore time and temperature constitute the two means of determining finished development. With a predetermined temperature only the time element remains. This flasher gives a warning when the time is up, so overdevelopment cannot accidentally take place.

The clock can be defunct otherwise but the minute hand must work. Drill a hole in the clock face at the numeral 12 and insert a small bolt. Over the bolt is an insulating sleeve of paper and over that a brass collar. Thus the collar is insulated from the clock. Wire the collar to a miniature lamp socket in which is a 3-volt bulb either stained dark green or wrapped with green paper. This is then wired to one side of the battery supply with a switch in series. The other side of the battery connects to the metal body of the clock.


contact peg
2·5 V. Dial Bulb
switch
11
1
10
2
9
3
4
7
6
5
dry cells or bell transformer
minute hand "makes" circuit at contact peg and lights lamp
minus grounded to clock frame
wire
small bolt
brass contact collar
insulating sleeve
lock-nut
contact peg

DARK-ROOM "FLASH" TIMER MADE FROM OLD ALARM CLOCK

When development starts set the minute hand so many minutes to the "left" of 12 and close the switch. When the hand reaches 12 it contacts the collar, completing the circuit and lighting the lamp. The green light, at the final stage of development, will not affect the film. Opening the switch shuts off the light. By shunting a bell across the lamp, a signal can also be heard from a distance.—*L. B. Robbins, Harwich, Mass.*

Emergency Ferrotyping

ONE may often want a glossy print in a hurry. In case he has no electric dryer here is a method that works very satisfactorily.

Secure a tin can, any size depending on the size of the print, and remove the paper label. Wash the can clean with soap and water and polish the tin with a regular waxing solution or floor wax. Next, take the wet print and put it on the tin, being sure all parts of the print are in contact. Excess water may be removed by wrapping a cloth or blotter around the can and print and pulling it tight.

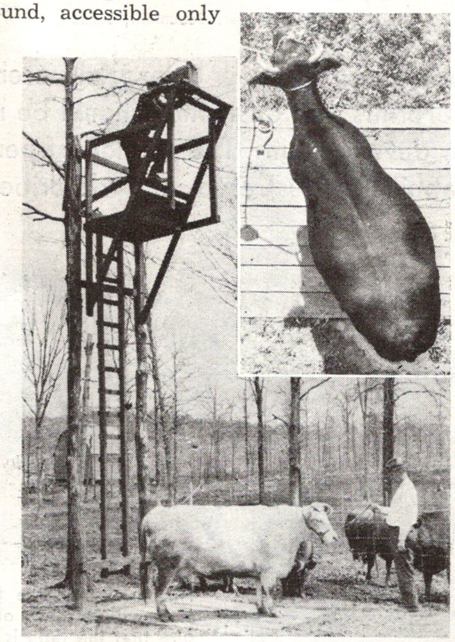
Now pour some very hot water into the can and your print will be dry in about two or three minutes and will come off with a good gloss surface.—*Bill Larsen, Racine, Wis.*

Stunts in Livestock Photography

by George H. Dacy

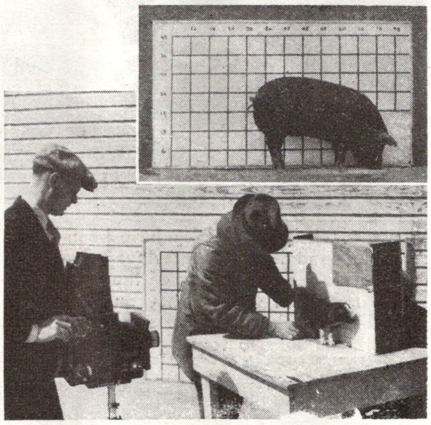
BECAUSE Uncle Sam makes "pictorial histories" of the growth and development of experimental cattle and swine, several of the most curious camera stands are now in use.

One is a wooden platform perched 30 feet above the ground, accessible only by ladder. It is equipped with a special table for holding the camera in a horizontal position with the lens pointed straight downward. This camera from its elevated perch is in constant focus on a slab of concrete set in the ground directly below the mount upon which experimental beef cattle are posed in order that photographic records may be made of their broad backs, spring of rib and toplines.



Topview pictures of cattle are made from a 30-foot stand to show topline, spring of ribs, and back development (see inset).

A series of such pictures of the individual animal from calfhood to maturity shows the step-by-step growth in back and loin where the choicest cuts of meat are produced as well as the increase in rotundity as the animal gets older. These features are of particular importance in the physical setup of the beefsteakmakers. When enlarged these pictures are used in making comparative technical measurements to illustrate how physical characteristics are transmitted from parent stock to progeny, and the influence of different rations on body conformation.



Young pigs are photographed at regular intervals against a special background.

Swine used for research purposes are posed similarly every once in a while at the government farms. The camera stand for hogs is elevated only 18 feet above the ground with a concrete feeding floor directly below so that pictures may be made of either individual animals or groups of porkers while they are eating.

Individual close-ups are also made with the camera mounted on a tripod on the ground or held in a vertical position. In this instance, the hogs in turn are posed in front of a special background crosslined into squares of equal size. A white background with black lines is used for dark-coated swine and a black background with white lines for white hogs.

A special two-loop tackle made of strong black cord is used in posing baby pigs for their first pictures. The control loops are attached directly to the crosslined background, an attendant who operates the cords being concealed behind the background when the exposures are made. The "harness" is invisible in the finished picture, as its color coincides with that of the animal. The loops encircle the body, neck and head of the pig in such manner as to hold the animal quiet during the picture making.

In making pictures of the udder development of both beef and dairy cattle, the cameraman uses a Graflex which he places or holds between the forefeet of the animal. A livestock attendant cups his hands over the eyes of the cow or heifer during that process in order to quiet the beast and prevent her from seeing what is going on. Despite these precautions the photographer occasionally is the target for a couple of stray kicks or else has his camera kicked from his hands without warning. A series of pictures of each animal are made at six-month intervals. They record the progressive development of the udder better than written descriptions.—▶

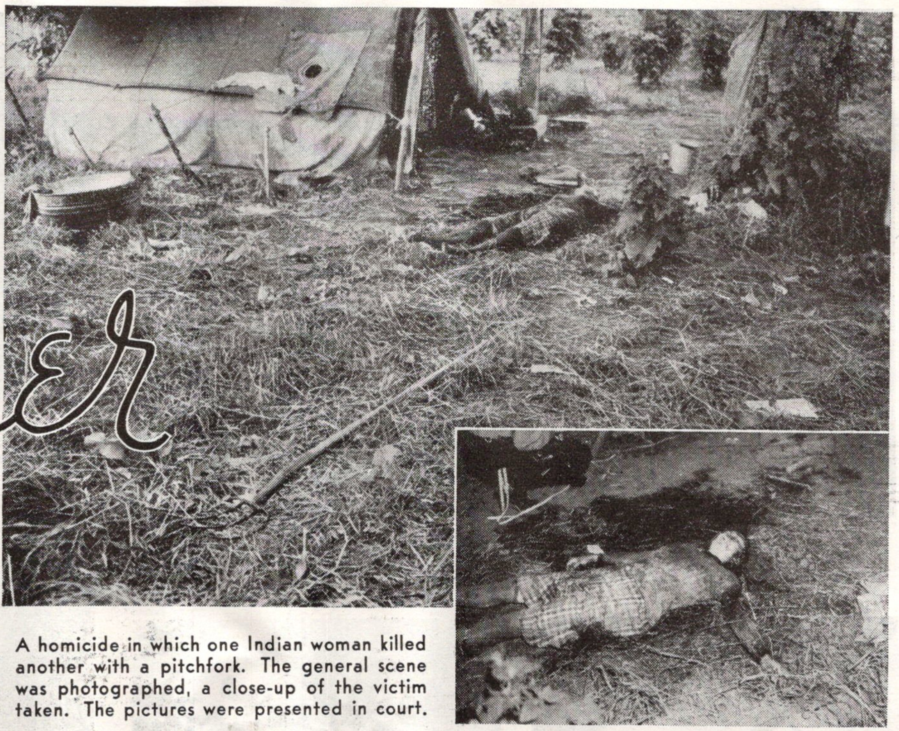
Diffusing Contact Prints

CONTACT prints can be diffused as well as can enlargements. Simply place a sheet of clean glass between the negative and the printing paper and print as usual. The thickness of the glass determines the amount of diffusion.—*Lester Robinson, Connellsville, Pa.*

by WALTER E. MAIR

Shooting for the Coroner

The camera is becoming increasingly important in law enforcement, since pictures may now be admitted as evidence in court.

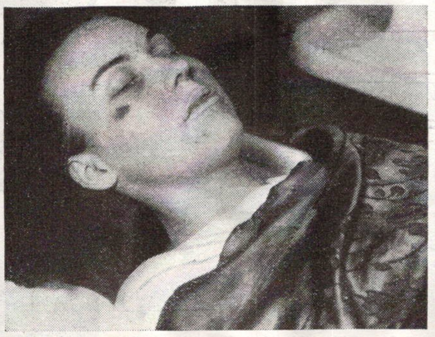


A homicide in which one Indian woman killed another with a pitchfork. The general scene was photographed, a close-up of the victim taken. The pictures were presented in court.

"FOR the amateur who can 'take it,' there is probably no more fascinating field in still photography than that of violent death," commented Roy L. Crabtree, Chief Deputy Coroner of Multnomah County, Oregon, of which Portland is the county seat. "If yours is a temperament keyed to candid shots of strip-tease dancers, beautiful blondes in postage-stamp bathing suits, or classical shots of pastoral quietude, I don't recommend it.

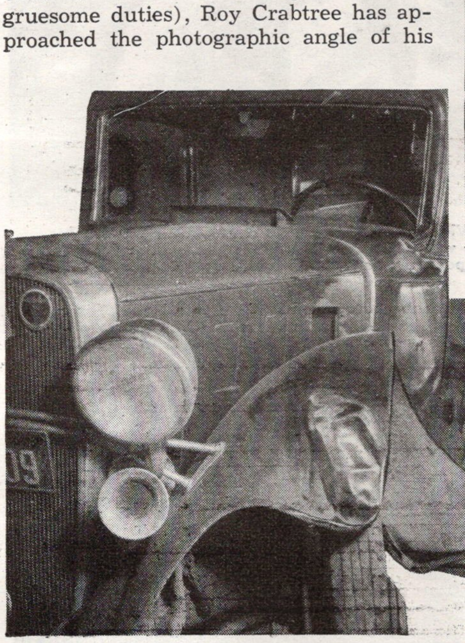
"But if you are alert to the vastly increased public acceptance of photographic realism, even in the grim realm of 'fire, murder, and sudden death,' and want to be able to take advantage of such opportunities as come your way, perhaps my experiences may be of interest."

An able and hard-working professional investigator for Dr. R. M. Erwin (whose office is noted for thoroughness in its gruesome duties), Roy Crabtree has approached the photographic angle of his profession slowly, almost hesitantly, in his eleven years of service.



Struck down by a hit-run driver, this girl was photographed in the morgue for identification purposes and also to show the details of her fatal injuries.

Another hit-run victim. Such photographs, rarely shown the public, would help wage war against conscienceless drivers.



← Photographs of cars involved in accidents assist the police materially in determining the responsibility for the accident.

"I had to wait nine years before I was able to get any appropriation at all for this work," he said. "But I believe, now that Oregon has passed a law permitting the introduction of photographic evidence on salient points in homicide inquiries and trials, this phase of our work will be improved and better supported in the budget as time goes on. I feel the need has been amply demonstrated in coroner's offices everywhere."

Deputy Crabtree makes it plain that he has the highest regard for the work done in the office of Stanley McDonald, well-known criminologist in charge of the county crime detection laboratory, as well as that of Glenn L. Harms, in charge of the Portland police photographic bureau.

"From their work I have gleaned much that has improved my own technique. As a matter of fact, I am called upon to function officially (outside the Coroner's office) only when they need a pinch-hitter," said the 38-year-old war veteran who is building up an invaluable photo file for Dr. Erwin.

"But photography has long been my hobby. And I know that amateur and professional alike will understand that what I have done may be reasonably well approximated in an emergency by camera fans anywhere."

To state that Crabtree is a typical camera fan is to put it mildly. When he joined the American Expeditionary Forces for service in the balloon corps at the age of 18, he smuggled a small camera into his pack. Thus he managed, from time to time, to get a few lively momentoes of action near the front. Though handicapped at present by a multitude of duties and by restricted funds, he carries equipment with him and snaps a flash light shot whenever opportunity presents itself.

(Continued on page 77)

Elmer V. Armstrong of Dundalk, Md., took this very striking and artistic silhouette against a sunset. He used a Kodak Junior Six-16 and red filter. The exposure was 1/25 sec. at *f* 6.3 on Eastman Super Sensitive film.

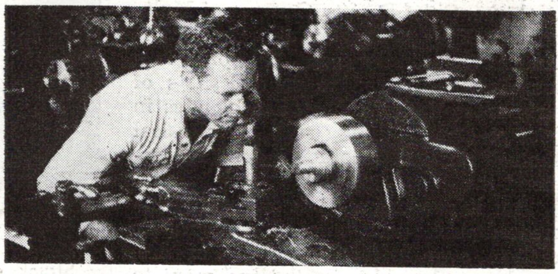
Shot by Clifford Lees, Pueblo, Colo., with 4x5 Graflex, 2 sec., *f* 16, on SS Pan by light from stage spot.

Taken with a 2¼x2¼ Korelle Reflex by John H. Dunnewin, Grand Rapids, Mich., 1/50 sec., *f* 8, Agfa Superpan.

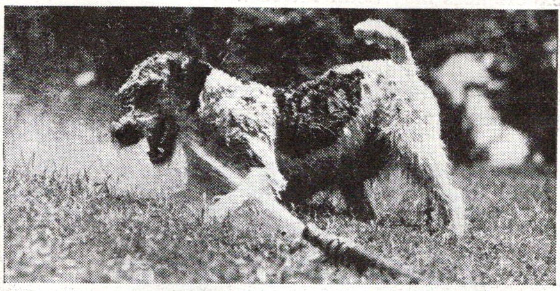
This candid shot was taken by Kenneth Mazawa, Chicago, Ill., and is awarded the star for second best print submitted this month. Mazawa made the picture with a Kodak Junior Six-20 camera on Super Sensitive film. The exposure was 1/50 sec. at *f* 11.

Night shot taken from 27th floor of office building by Herbert M. Senger, San Francisco, Calif., three-minute exposure at *f* 11 on Agfa Superpan Press.

George Carlson of Chicago, Ill., took this picture with a Rolleicord and *f* 3.5 lens. It was an "open flash" at *f* 11 with No. 10 bulb, on Panatomic film.



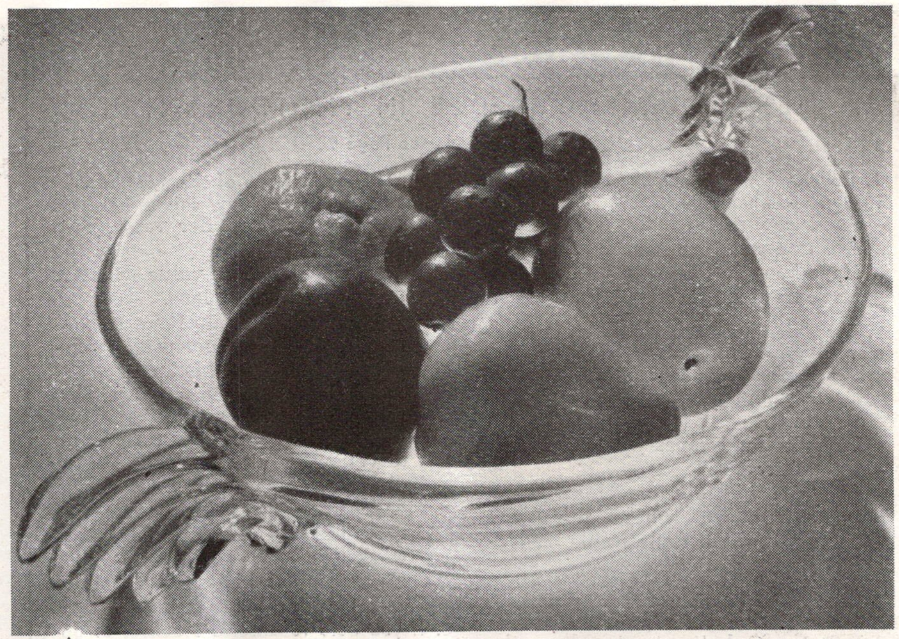
A good indoor snapshot made by James Porter of Anaheim, Calif., with a model C Argus on Agfa Superpan. The exposure was 1/50 second at *f* 3.5.



J. P. Whiskeman, Jr., Youngstown, N. Y., took this picture with a Contax III and 50 mm Sonnar *f* 2 lens. The exposure was 1/250 second at *f* 4 on pan film.

Below: Beach photograph made with a Kodak Six-16 by Robert Buehler of Brooklyn, N. Y. The exposure was 1/100 second at *f* 5.6 on Super Sensitive film.

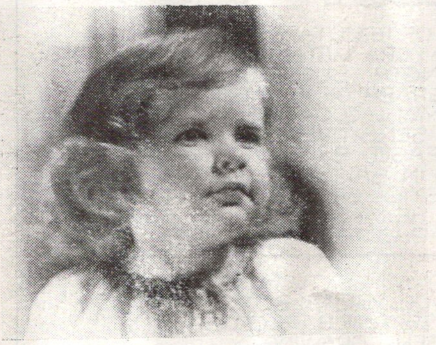
Seymour S. Morris, Passaic, N. J., won a first prize with this light ray photo which he took with a Bentzin-Primar camera.



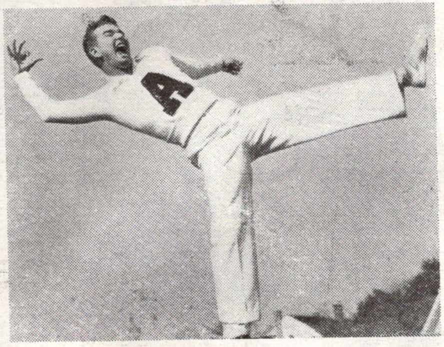
Still life study of wax fruit by John J. Davis, Haddonfield, N. J., selected as the best picture this month. The bowl was placed over a hole cut in the top of a carton, a 60-watt light placed under it and a 100-watt light in back of it. Davis used a Kodak Junior Six-16 with an ƒ 6.3 lens, and the exposure was 3½ minutes at ƒ 45 on Verichrome film.

Pictures From Our Readers

Photo by Alwin L. Lutz, Phillipsburg, N. J., taken with a Kodak Six-20 and color filter, 1/25 sec. at ƒ 8 on Verichrome film.



Portrait by C. D. Hart, Amherst, N. S., Can., made with a 1A Kodak and two Photofloods on SS Pan. Exposure, 1/50 sec. at ƒ 8.



Made by John Faber, U. of Alabama staff photographer, with a 4x5 Speed Graphic, 1/200 sec. at ƒ 12.5 on SS Pan film.

Below: Carl Horowitz of Brooklyn, N. Y., took this with a Rolleiflex and red filter, 1/25 sec. at ƒ 6.3 on Agfa Finopan.

Photograph by F. E. McIntosh, Portland, Ore., made with a 3¼x4¼ Graflex camera on Panchro Press film. Exposure, 1/75 sec. at ƒ 8. The print is titled *Aristocrats.*

?? PHOTO QUIZ ??

TEST YOUR KNOWLEDGE IN PHOTOGRAPHY

For correct answers see Page 92

1. Development of your film and prints actually stops when they:
- Are removed from the developer.
- Are immersed in short stop bath.
- Have been in the hypo 5 minutes.
- Have been in the hypo 10 minutes.

2. The Pola-screen is widely used in commercial photography. It is especially useful when photographing:
- Beach shots where there is a lot of sand.
- Pictorial landscapes where diffusion is desired.
- Children with oily complexions.
- Store windows where there are likely to be undesirable reflections.

3. Do you know which of these statements is correct?
- It is always better to stop down the lens to *f* 22 when enlarging.
- It is always advisable to use a strong projection light.
- A weak projection light is preferable to a strong light for enlarging thin negatives.

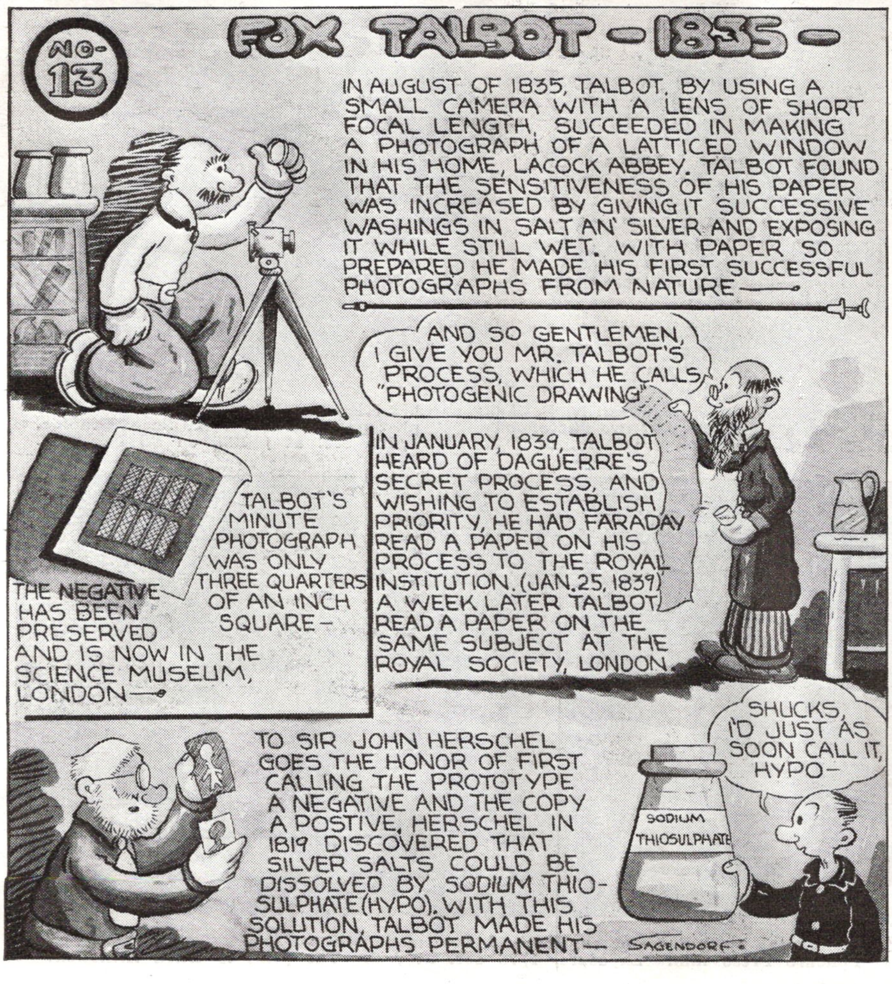
4. The "Tessar" is one of the most popular lens formulas of the day, chiefly because:
- Of its ability to render very sharp definition.
- Because the trade-in value is better than on any other lens.
- You can pick them up for a song.
- You do not need a portrait attachment when using this lens.

5. Only one of these statements about films is wrong. Do you know which?
- Panchromatic film is more sensitive to yellow than to red light.
- Orthochromatic film is color blind.
- Plenachrome and Verichrome are recommended for general outdoor work.
- Orthochromatic film is sensitive to green, yellow, and orange.

6. If you were to dissolve 3 ounces of potassium bichromate in 32 ounces of water, then add to this solution 3 ounces of sulphuric acid, you would have an excellent:
- Intensifier for negatives.
- Print developer.
- Tray cleaner.
- Toning bath.

HISTORY OF PHOTOGRAPHY

BY F. C. SAGENDORF—


FOX TALBOT —1835—
NO. 13
IN AUGUST OF 1835, TALBOT, BY USING A SMALL CAMERA WITH A LENS OF SHORT FOCAL LENGTH, SUCCEEDED IN MAKING A PHOTOGRAPH OF A LATTICED WINDOW IN HIS HOME, LACOCK ABBEY. TALBOT FOUND THAT THE SENSITIVENESS OF HIS PAPER WAS INCREASED BY GIVING IT SUCCESSIVE WASHINGS IN SALT AN' SILVER AND EXPOSING IT WHILE STILL WET. WITH PAPER SO PREPARED HE MADE HIS FIRST SUCCESSFUL PHOTOGRAPHS FROM NATURE—
AND SO GENTLEMEN, I GIVE YOU MR. TALBOT'S PROCESS, WHICH HE CALLS "PHOTOGENIC DRAWING"
TALBOT'S MINUTE PHOTOGRAPH WAS ONLY THREE QUARTERS OF AN INCH SQUARE—
THE NEGATIVE HAS BEEN PRESERVED AND IS NOW IN THE SCIENCE MUSEUM, LONDON—
IN JANUARY, 1839, TALBOT HEARD OF DAGUERRE'S SECRET PROCESS, AND WISHING TO ESTABLISH PRIORITY, HE HAD FARADAY READ A PAPER ON HIS PROCESS TO THE ROYAL INSTITUTION. (JAN. 25, 1839) A WEEK LATER TALBOT READ A PAPER ON THE SAME SUBJECT AT THE ROYAL SOCIETY, LONDON.
TO SIR JOHN HERSCHEL GOES THE HONOR OF FIRST CALLING THE PROTOTYPE A NEGATIVE AND THE COPY A POSTIVE, HERSCHEL IN 1819 DISCOVERED THAT SILVER SALTS COULD BE DISSOLVED BY SODIUM THIOSULPHATE (HYPO), WITH THIS SOLUTION, TALBOT MADE HIS PHOTOGRAPHS PERMANENT—
SHUCKS, I'D JUST AS SOON CALL IT, HYPO—
SODIUM THIOSULPHATE
SAGENDORF.

Prize Contests and Markets

POPULAR PHOTOGRAPHY, 608 S. Dearborn St., Chicago, Ill. Pet Picture Contest open to all amateurs. See page 57 of January issue for rules. Closing date, February 1st.

RADIO NEWS, 608 S. Dearborn St., Chicago, Ill. Cash prize contest involving pictures of radio apparatus. For full details see the January issue of RADIO NEWS. Closing date, January 31, 1939.

PARENTS' MAGAZINE, 9 East 40th Street, New York City, offers prizes of $25, $15, and $5 for the best snapshots submitted showing companionship between a father and a child. Closing date, April 1, 1939.

NATIONAL COUNCIL Y.M.C.A.'s, 347 Madison Ave., New York City. First prizes of $25 and second prizes of $15 in each of the following classifications: (1) Youth at Home, (2) Youth at Work, (3) Youth at Play, (4) Youth and Citizenship, (5) Youth at Worship. A grand prize of $50 for best photograph in entire contest. Prints must be black-and-white no smaller than 8x10. Contestants may apply at local Y.M.C.A.'s or to the Contest Editor at the New York headquarters for contest rules. Closing date Feb. 15, 1939.

INTERNATIONAL RESEARCH CORP., 149 Fourth Ave., Ann Arbor, Michigan, are awarding each month for five months, December, 1938, to April, 1939, a first prize of $25, second prize of $10, and three additional prizes of $5 each for the best photographs taken with any model Argus camera by high school students.

The photographs winning first prize in the five monthly contests will qualify to compete for the final grand prize of $100 which will be awarded May 1, 1939. Entry blanks may be secured from Argus dealers.

REDBOOK MAGAZINE is publishing 16 photographs by amateurs each month. Prizes: "Snapshot of the Month," $50, remaining 15 pictures $5 each. The best picture of the year ending October, 1939, will receive a grand prize of $500.

FURNITURE SOUTH, High Point, South Carolina, announces that it is now purchasing photographs having as their theme retail furniture store scenes of an interesting and newsworthy nature. Glossy 8x10 prints only are considered and decision is within 30 days. Rates: $2.50 to $5.00.

KENT STATE UNIVERSITY, Kent, Ohio, will award first prizes of $40 and second prizes of $10 in the divisions of news and pictorial photography in the competition to be held on March 29, 30, 31, and April 1.

Newspaper employes and students and instructors in schools of journalism may compete in the news section, while anyone may enter the pictorial section. Write Professor A. Clarence Smith for details. Closing date: March 1st.

R. L. POLK & CO., Detroit, Mich., advise that they are in the market for pictures on truck transportation "that are first pictorially beautiful . . . secondly that have some tieup with truck transportation . . . beautiful canyons, winding mountain roads, wonderful bridges with a truck somewhere in the picture . . ." Rates are from $3.00 to $10.00.

To Soften Brittle Prints

OFTEN the brittleness of a print becomes objectionable and it is desired to make it more flexible and less liable to crack, as well as to overcome its tendency to curl. The print may be treated, after the final wash, with a softening solution composed of 1 part of glycerine to from 5 to 10 parts of water, depending upon the brittlenesss of the paper and the results desired. The print should remain in this solution for at least 5 minutes, after which it is to be dried without further washing. In the case of glossy prints, this treatment overcomes the difficulty often encountered in getting the prints to peel off of the ferrotype tins without sticking.—*Ethel S. Capps, Spokane, Wash.*

Print Criticisms

This service is free to our readers. Send your prints with technical data to POPULAR PHOTOGRAPHY, 608 S. Dearborn St., Chicago, Ill. Prints will not be returned.

C. E. Z., Philadelphia, Pa.—Your attempt to get a pleasing, informal outdoor portrait was marred somewhat by the unfortunate lighting conditions which prevailed in the exact location in which the subject was seated. Portraits taken in the shade frequently come out nicely if the subdued light is even. Here, however, the sunlight filtered through the foliage overhead to produce a mottled effect which amounts almost to a camouflage since it blends with the foliage in the background. You should always try to avoid this effect, since the background should serve to emphasize the subject rather than to obscure it. The exposure, expression, and pose all were well handled here, and it was a good idea to seat the subject informally on the log. But her feet should appear in the picture as long as the lower portion of the figure is to show. The accompanying sketch will show one way in which this subject might have been photographed to good advantage.

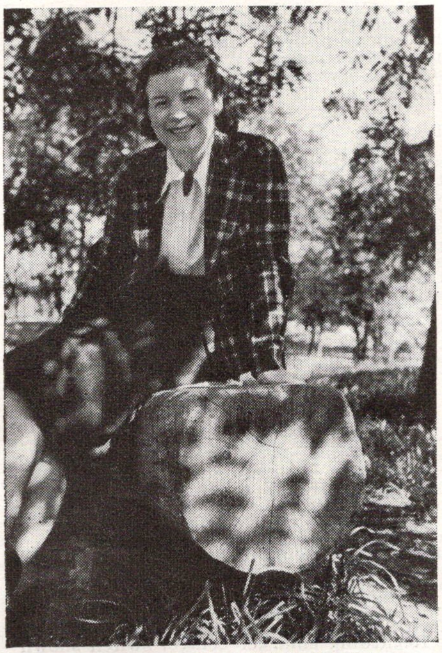
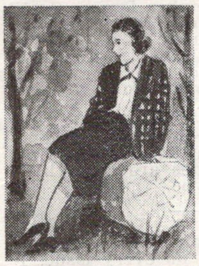


Photo by C. E. Z.



Left: An improvement in the background and composition is shown in this drawing.

* * *

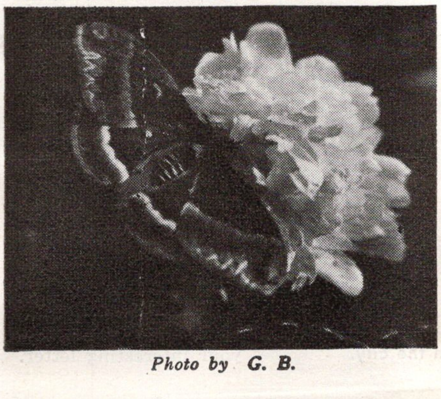


Photo by ***G. B.***

G. B., Esmond, N. D.—It is interesting to note how close you were able to approach the butterfly as it rested momentarily on the peony blossom. Of further interest is the remarkable clarity of detail which is evident in your original print. The print itself, however, is much too dark in tone. This may be due to an underexposed negative, or it may simply have been printed too dark. A more contrasty paper is recommended if a shorter exposure does not give you a better print. Compositionally, your picture is good and you undoubtedly chose the best camera angle possible under the circumstances. But the butterfly, being on that side of the blossom away from the light, is almost lost against the very dark background. A better picture would have resulted by using a background of more neutral tone.

* * *

K. R. N., Bartonville, Ill.—We have taken the liberty of cropping from the bottom and the top of your original print a total of almost one-third of the original print area. This was done because the cropped portions detracted from the picture. By holding your camera in a horizontal position rather than the accustomed vertical way you would have automatically cut out much of this extraneous material in the actual taking of the picture. Closer attention to what you see in the finder of the camera will inform you as to whether a certain shot is going to look better vertical or horizontal. Your main subjects, a boy getting his dog to beg for a tasty bit of food, were snapped very well indeed, and the shot has that spontaneous quality so desirable in pictures of this type. However, the somewhat bold, irregular dark masses formed by the building in the background, together with the trees at the right, tend to distract attention from your main subjects. The exposure was good and the negative seems to have been capably printed. Apparently your big problem is to suit your backgrounds to your subjects (a common ailment among amateurs). We suggest that you review Stan Jenkins' articles in the July and August 1938 issues of POPULAR PHOTOGRAPHY.

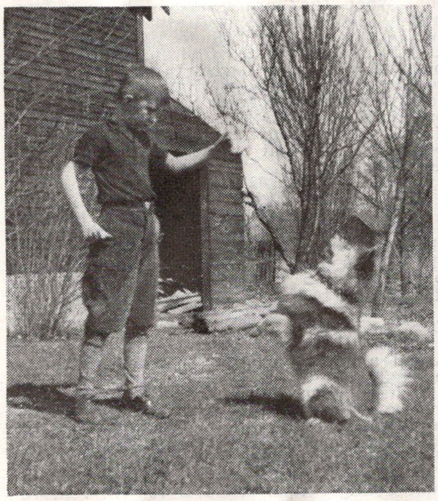


Photo by K. R. N.

* * *

G. B. H., London, Ont.—For having given a 5-second exposure in making this shot you have got an uncommon amount of sharpness in the picture. Living subjects should rarely or never be given an exposure of more than 1 second; and even this is conceded to be hazardous, since it is almost impossible for a human being to remain absolutely motionless for that period of time. Your use of natural light coming through the window on a dull day is to be commended (except for the comparatively lengthy exposure it necessitated), as this type of light can produce desirable softness and modeling in portrait work. As a matter of fact, you did not need as long an exposure as you used, because the print indicates some overexposure of the negative. This has caused a good portion of the subject's face and apparel to look chalky white. Some sort of reflecting board behind the subject might have "bounced back" light on those portions of the subject which are in deep shadow.

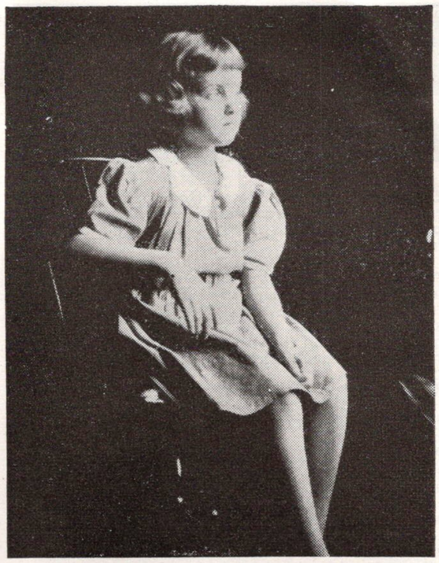


Photo by G. B. H.

* * *

W. S., Vallejo, Cal.—If you could have found an expanse of plain wall with nothing in front of it, or some dark full-length drapes, you'd have had a better background for your subject. A darkened doorway, with lighting concentrated on the subject, might have worked well, too. As it is, the sofa and bookcase tend to chop up your picture, as does the window to the left. Your subject appears to have been lighted rather well; and while her facial expression is a pleasant one, her pose does not indicate that she was entirely at ease when the picture was snapped. If possible, try another shot of this subject; seat her comfortably, and include in your viewfinder just her head and shoulders. A good full-length portrait is a tough assignment, unless both model and photographer are veterans in that line of work.

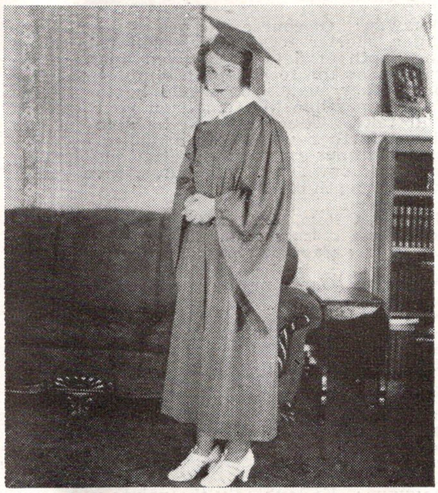


Photo by W. S.

Questions & Answers

L. F. De W., Boston, Mass. How soon may I safely take my 35 mm negatives out of the hypo when processing has been done in a daylight tank with frequent agitation?

ANSWER: Several excellent amateur workmen of our acquaintance fix their negatives for only about 8 minutes under conditions similar to those you mention. Certainly 10 minutes would be adequate, assuming that you use a fresh fixing solution.

R. R. M., New York, N. Y. What filter would you suggest as being most practical for beach shots in Florida this winter?

ANSWER: With panchromatic film you should get fine results with an orange filter in bright sunlight. With orthochromatic emulsions a K-3 (deep yellow) should do nicely. Capable photographers also make excellent use of the A (light red) filter with pan film on a sunlit beach. However, this filter should not be used when people are photographed at close range or skin tones will appear chalky in the print.

M. M. N., Oak Park, Ill. In making big enlargements of sections of my miniature negatives I find that using chloro-bromide papers necessitates a rather lengthy exposure time. Bromide paper prints much more rapidly but I do not like to give up the use of the chloro-bromides, with their excellent tonal scale. Have you any suggestions?

ANSWER: A stronger light source in the enlarger would help, although you must watch to see that the more powerful lamp does not injure your negatives with its heat. Your best bet, we believe, is to investigate the faster chloro-bromide papers which are on the market. One such paper we know of prints almost as quickly as the straight bromides, yet has all the latitude inherent in the chloro-bromide emulsion.

B. D. O., Washington, D. C. Is there any danger in leaving prints in a fixing bath longer than is necessary to fix them?

ANSWER: To leave your prints in a fresh hypo fixing bath for a relatively long period of time is to risk the danger of bleaching them slightly. Twenty minutes is certainly a long enough time to completely fix your prints.

J. L. R., Oklahoma City, Okla. I have gotten some pretty fair shots of an express train coming toward me at a rather sharp angle. I only wish I could get more of the train in focus: the engine and tender are in good focus, but the last car is a blur. Can you help me out?

ANSWER: Of course, the use of a lens having a shorter focal length will help, since the depth of field at a given aperture increases as the focal length diminishes. Our only other suggestion would be to use the fastest possible film emulsion your camera will take. Thus you will be able to stop down further under given lighting conditions without sacrificing shutter speed. This stopping down will, of course, give you a greater depth of field.

J. G. D., Owosso, Mich. Is there any way of keeping viscose sponges continually moist and pliable so that they are ready at all times for use on films?

ANSWER: One amateur we know keeps his sponges in an airtight glass jar (a fruit jar with a screw top would do nicely). In this way he not only keeps the sponges pliable but does away with the problem of keeping dust and dirt from getting into the sponges.

H. S., Chicago, Ill. Some recent enlargements seem to be pretty good except that they have a sort of general grayishness all over them. This extends even over the white borders of the prints. What could have caused it?

ANSWER: Undoubtedly the prints you mention have simply been "fogged." Probably your safelight is not "safe" for use with the paper on which you made these prints. Or possibly the fogging was due to your keeping the prints in the developer too long.

D. G., Orono, Me. What is a good way to determine the focal length of a lens?

ANSWER: One of the simplest methods we know is by using a piece of groundglass or a piece of waxed paper stretched taut. With

(*Continued on page* 81)

Letters to the Editor

Dear Sir:

Mr. Jordan has referred to me your letter of December 9th with regard to the current rumor about our color print plans.

We are spending considerable time and money on research in the color print field and believe that there are several interesting developments capable of reaching the commercial stage in the near future. While naturally at this point unable to indicate to you the exact technical lines along which we are working, I can say that there is no foundation to the rumor that we are developing a special paper bearing a reseau similar to Dufaycolor film. There are fundamental technical reasons concerned with the idiosyncrasies of reflected as opposed to transmitted light which make me doubt that such a method of printing could ever be satisfactorily developed.

As soon as we have any important announcement in regard to the improvements upon which we are working, you will naturally be advised.

P. M. HAMILTON, Pres.,
Dufaycolor, Inc., N. Y. C.

ED. Mr. Hamilton's kind letter will answer many inquiries on the subject.

Dear Sir:

For several months I have been reading your excellent journal and I felt that a letter of congratulation was your rightful due, and my privilege to write, although I rather feel that POPULAR PHOTOGRAPHY is such that you can only number mine amongst thousands of others.

There is one thing I would like to say . . . I notice that we in Bath are favored by a good many visitors from the other side. Amongst them, I have often thought, must be a few of your readers, and if you would be good enough to let them know, that when they are here and have a few hours to spare, there will always be one or two of us delighted to make their acquaintance, and perhaps be of service in pointing out the best spots to visit in this delightful countryside. Again, we have a club darkroom that might serve a turn if a film jams or someone wants to check his exposure. Just tell them my name is in the phone book and we shall be pleased to meet and help them.

R. REDVERS LEWIS, Hon. Secy.,
Bath Photographic Society,
Bath, Somerset, England.

ED. Thank you very much for your gracious invitation to our readers. We are sure that if they are in your city they will be particularly grateful to take advantage of it and glad to make your acquaintance.

Dear Sir:

In the November issue C.B.H. of Texas asked about developing 35 mm film in a tray.

I have been doing mine that way for over a year without any trouble. Place a small piece of adhesive tape on each end of the film (as the sharp edges will scratch the first two or three frames). Roll and unroll film for full developing time. Use rubber finger tips. Also D-76 will remove D-72 stains from trays.

J. P. D.,
Lynn, Mass.

ED. Your experience should prove interesting to C.B.H. and also to others.

Dear Sir:

. . . Some time ago you published a questionnaire as to the types of cameras owned. Also Mr. Champlin's article on the camera of the future. I propose including a page of questions which readers could check off . . . such as film size preferred, negative size, type and speed of shutters, interchangeable lenses, etc. By this method an accurate check is simplified. Then show a composite camera in a forthcoming edition, and we could see how close Mr. Champlin's article was to the most popular camera.

HARVEY DAILEY,
Toronto, Canada.

ED. Most of the questions were asked in the questionnaire you mention. It would be difficult to break them down for the purpose you suggest. We are sorry that we are not prepared to do this at the present time.

Dear Sir:

Every issue of POPULAR PHOTOGRAPHY seems better than the last, but I am sure that we Camfans will look at all the advertising even if you tried to hide it. To prove it, think of all the catalogs that are sent out by the manufacturers. . . . Soooo please do not continue so many stories from section to section. When you continue to the back section and then have only about an inch or so left to read it is too obvious. Only one other thing and that is color photography, don't overdo it. We are all interested in the advances made but to a lot of us who are not that advanced let it come slowly.

C. S. CONNOLLY,
Oakland, Calif.

ED. We are sorry but it is necessary to continue stories in the back of the magazine due to our type of makeup, as is the case with practically all magazines. We feel it is better to turn a story over than to cut it short.

In regard to color, we have tried to keep all articles elementary and interesting so that anyone could understand them. Our correspondence shows an amazing increase of interest in color.

Dear Sir:

Regarding enlarger control switch shown on page 78 of your December issue. Such an arrangement is extremely dangerous due to the type of switch used. This switch should be a fully enclosed snap switch. In a dimly lighted room the operator could easily come in contact with the bare copper of the switch shown. . . .

LEWIS B. COE,
Crown Point, Ind.

ED. Thank you for your suggestion. Undoubtedly enclosed switches are much better than the uncovered type.

Dear Sir:

On reading your December issue of POPULAR PHOTOGRAPHY, as I do every issue, I was a little surprised that your correspondent, Norwood Miller, in writing about the amateur newsreels, failed to give Oregon, not to say anything about Cottage Grove, a small town of three thousand people, any recognition as one of the states and cities offering 16 mm newsreels to the public. After reading the article twice, I decided not to be surprised if Mr. Miller had not heard of Cottage Grove because after all it is a small town and way out west so I decided to let you know about our activities.

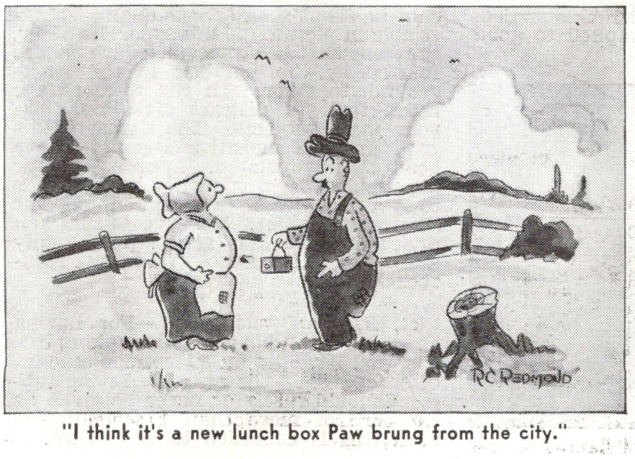
I have been using 16 mm for advertising local merchants and newsreel work for almost a year now. I take all the pictures myself . . .

After seeing how well the advertising went over and the ease with which I could sell it, I went into the newsreel shortly afterwards . . .

I keep my camera loaded at all times and when people see me taking pictures they know they will be able to see them at the theater. People call on the phone, write, and call personally to tell me about interesting subjects . . . I really think the 16 mm newsreel is here to stay . . . because of the local interest.

C. MORELOCK,
Cottage Grove, Ore.

ED. Thank you for your interesting letter.

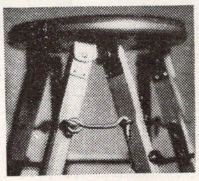


"I think it's a new lunch box Paw brung from the city."

New Tricks FOR CAMERA OWNERS . . .

A monthly list of valuable kinks and hints for the amateur. POPULAR PHOTOGRAPHY will pay $3.00 for each one accepted.

Non-Slip Tripod Brace



Door hook holds tripod steady.

By mounting ordinary screen-door hooks near the top of your tripod as shown, a practical brace is provided to keep the legs from slipping on a smooth surface. Hooks of all sizes are available, so it is only a matter of personal judgment as to the size and where they are placed.

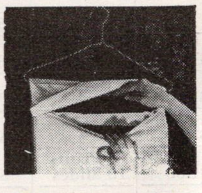
After obtaining the hooks the tripod is set up in its usual position. The places for the hook and screw-eye are easily ascertained and marked. Holes should be drilled, as the legs, being narrow, are likely to split. If the screws are too long the protruding ends are sawed or filed off. This device will prevent damage to the camera which might result from having the tripod slip on a smooth floor. Also, it can be moved around with the legs remaining in their proper position.—*John Steveley, Chicago, Ill.*

Uncurling Ferrotyped Prints

Bottle uncurls glossy prints.

A sure and simple method of taking the curl out of glossy prints is seen at a glance in the accompanying illustration. The prints, after being ferrotyped and dried, are merely wrapped around a bottle and held in place with a string or rubber bands for an hour or so. It's a good idea to put a piece of heavy paper over the emulsion side of the outside print to prevent marks which might be caused by the string or elastic. I have found that putting hot water in the bottle tends to speed up the uncurling process, particularly if the prints have retained a slight bit of moisture after being ferrotyped.—*Ralph C. Erskine, Jr., New York City.*

Bag for Ferrotype Tins

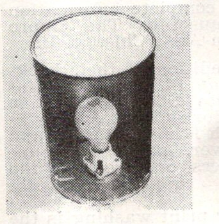


Bag protects tins.

Ferrotype tins—necessary equipment, yes, but what a nuisance for the amateur to take care of between times!

Enter "tin panties." A couple of yards of canton flannel, a wire coat hanger, and a few minutes' time with scissors and sewing machine solves the problem at the cost of only a few cents. Stitch the sides of three (or more) pieces of flannel so that they form a series of bags, leaving one piece long enough for a flap. Use the salvage for the open side. Fasten the flap to a coat hanger by stitching it firmly, and you have a "tin pantie," an inexpensive device to keep one or more ferrotype tins safe, dustless, and in a minimum of space.—*Edmere C. Barcellona, Kenmore, N. Y.*

Tin Can Lighting Unit



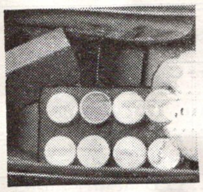
Oil can reflector.

Many suggestions have been made for producing home-made lighting units, but often the cost of the parts alone exceeds the expense of buying good commercial type units.

However, by obtaining an empty five-quart oil can from your favorite filling station, part of the side can be cut away to form a fine reflector at no cost whatsoever. The seam should not be cut away, as this gives added stiffness to the can. A porcelain socket may be permanently mounted on the bottom inside, or a hole cut which will make the reflector instantly adaptable to any lamp.

The more tin cut away the broader will be the light and conversely the smaller the cut, the narrower the beam. All sharp edges should be bent over and pounded down for safety.—*F. C. Everett, Parma, Ohio.*

Holder for Film Cans



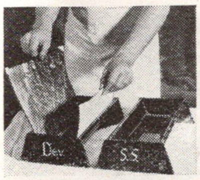
Film can holder.

Cans of 35 mm film have a bad habit of getting buried under other accessories when carried loose in your camera kit. A block of wood, with holes drilled the size of the cans, will eliminate this trouble. Cover the block with some sort of cloth, thick enough to hold the cans in place. Your film is then readily accessible and the unit can be fitted in the kit bag according to your own requirements. —*Larry J. Fisher, Beaumont, Tex.*

Writing on Negatives

Very often occasion arises when it is convenient, or necessary, to write on a negative. Owing to the glossy nature of the surface, this is very difficult to do without preliminary treatment. I have found that one of the easiest and most efficient methods is to rub the area which is to be lettered with an ordinary pencil eraser. This renders it perfectly adaptable to writing when using either a pen or pencil.—*Davidge H. Rowland, Baltimore, Md.*

Developing Troughs for the Larger Print Sizes

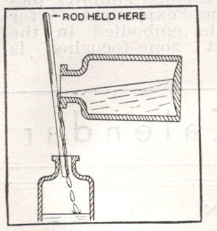


Using trough trays.

For the amateur who only occasionally makes enlargements beyond 8 x 10, the purchase of the expensive 11 x 14 and 16 x 20 trays is hardly justified. An inexpensive solution to the problem is to have your local tinsmith build two or more troughs from ordinary galvanized gutter as illustrated. Pieces of sheet metal cut as shown form the two ends and also the base. The troughs are made 17" long inside to accommodate prints up to 16 x 20". Ordinary acid short-stop bath is applied to the galvanized surface, and after this is dry the troughs are given two coats of Kodacoat paint.

Separate troughs are used for developer and short stop, using only a small amount of each solution, as compared to the relatively large quantity required by 16 x 20 trays. Prints are see-sawed up and down which gives even development with no possibilities of streaks or air-bells. The purchase of one 16 x 20 tray is advised for fixing and washing purposes. Total cost of troughs was about 60c each with the subsequent saving of solutions each time they are used.—*R. Stadelman, Hopkinsville, Ky.*

Pouring Without Spilling



Rod aids pouring.

Often when pouring liquids into bottles some of the solution runs over the outside of the bottle, and in many cases the label is spoiled, the desk is smeared, or material in the desk may be ruined if the desk top has cracks in it.

This fault may easily be corrected by holding one's glass stirring rod or similar shaped rod vertically against the mouth of the bottle or beaker from which the liquid is being poured. It will follow the stirring rod, one end of which should be placed in the neck of the receiving bottle, and thus avoid any slopping. This method is especially good for pouring small amounts of liquids such as glacial acetic acid into small graduates, etc. For non-corrosive liquids, a wooden stick about the size of a lead pencil may be used very successfully—*George E. Woods, State College, Pa.*

Kodachrome Movie Titles

When making titles on regular Kodachrome (outdoor) by photoflood I cover the lights with sheets of light blue cellophane. There is very little difference between making titles this way and with Type A Kodachrome and bare floods, except that the former requires a lens opening one stop larger than the latter.—*I. L. Oakes, Urbana, Ohio.*

Trade Notes and News Items

DESIGNED for home use, visual education, and sales demonstration purposes, the new Leitz VIII-C 100-watt projector measures only 6¼x6¼x3", not including lens. It is made of plastic and metal and may be used for projecting either 2x2" glass slides or 35 mm. film strips. The front can be rotated so that both horizontal and vertical pictures may be projected from strips. A 3-lens condenser system and silvered reflector behind the lamp makes the illuminating system unusually efficient. It is easily removable so that either 50 mm Leica camera lens or 85 mm projection lens may be used. Without lens the projector lists at $42. Other prices and additional information may be had by writing to E. Leitz, Inc., 730 Fifth Ave., New York City.

Leitz Model VIII-C.

AN ADJUSTABLE rubber stopper designed for use in ½-gallon and 1-gallon bottles is being manufactured by Moeller Mfg. Co., Racine, Wis. This stopper has a metal frame and rubber sleeve and can be adjusted to different sizes by a turn of the core. After placing it in the neck of the bottle it is compressed by a small arm and assures an air-tight fit. This gadget is ideal for bottles containing developer, hypo, and other photographic chemicals as the metal parts which come in contact with the solution are stainless steel. The stoppers sell for 20c each, 3 for 50c, postage prepaid.

EXCLUSIVE distribution of the Felice Home Darkroom Cabinet has been taken over by G. Gennert, Inc., 20 West 22nd St., New York City. An illustrated folder showing the cabinet's many uses will be sent on application.

SEQUENCE photography, which permits rapid-fire action shots without turning the film for each picture, is brought to the popular-price field in the new Argus Model D 35 mm camera soon to be announced by the International Research Corporation. This automatic-film-advance camera will be in the $30 price range. The camera has been designed to still further simplify picture taking. A unique "exposurator" for controlling exposure is embodied in the design. Simple, fast zone-focusing is another feature, and a full footage scale is provided for accurate focusing down to 3' 6". The lens is an *f* 4.5 anastigmat and shutter speeds range from 1/25 to 1/200 second.

FOLLOWING the recent announcement of Professional Kodachrome Film, Type B, by Eastman Kodak Company comes word that Professional Kodachrome is now available in a type accurately balanced for daylight use in a number of popular sizes up to and including 8x10. Both can be used in ordinary cut film holders. Further information can be obtained from your dealer.

ARRANGEMENTS have been completed by which The Ampro Corporation of Chicago become exclusive U. S. Sales Agents (East of Rockies) for the Syncro-Sound 16 mm Professional Sound-On-Film camera as manufactured by Gumbiner Syncro-Sound, Inc., Los Angeles, Calif. This camera will allow good sound pictures to be made by anyone who understands the filming of home movies. It is a precision instrument which will produce work of professional quality. Folder with complete information will be mailed on request by The Ampro Corp., 2839 N. Western Ave., Chicago, Ill.

A NEW and revised edition of their booklet *Practical Speeds of Films and Plates* is announced by Photo Utilities, Inc., 10 West 33rd St., New York City. A copy is supplied free with each Mini-Photoscop and Cine-Photoscop, however, extra copies are obtainable from dealers or direct at the price of 25c.

A CLEVER device for print washing is the new Photo Rinser announced by L. G. Wright, Inc., 5209 Euclid Ave., Cleveland, Ohio. The Rinser is designed to give frequent changes of water automatically. Working on the seesaw idea one side of the pan is filled from the tap while the other side drains. When filled the pan tips on its pivot and the stream is diverted to the empty side. A guard prevents the water from striking the emulsion surface of the prints. The Photo Rinser will wash many 5x7, or smaller, prints at one time. It is 1½" deep, made of heavy steel coated with acid-resisting paint, and sells, complete, for $1. A larger size which will wash 8x10 prints on one side of the divider and 4x5 on the other retails for $2.

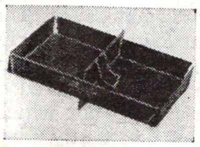
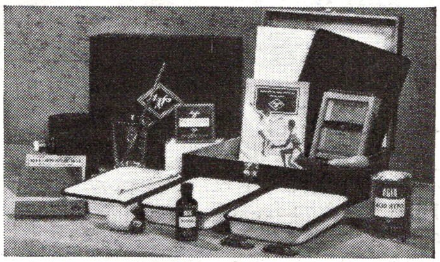


Photo Rinser.

A DELUXE darkroom outfit that provides all the essential materials for developing and printing is announced by Agfa Ansco Corp. Packed in a substantial wooden box the outfit includes masking print frame, safelight with bulb and filters, illustrated instruction book, three 5x7 trays, glass graduate, stirring rod, thermometer, film clips, print roller, one ferrotype tin, four 12x12" blotters, developer, hypo, and printing paper. The new Deluxe Darkroom Outfit is available through dealers and retails at $9.75.



MAKERS of Fotoflat and Foto-Welder, Seal, Inc., Shelton, Conn., announce the Fotoflat Dry Mount Kit. There are two kits to choose from, one at $1.95 contains three packages of Fotoflat Dry Mounts for mounting prints up to ¾x4½", one Baby Foto-Welder and one squeegee pad. The second kit at $3.95 contains three packages of Fotoflat Dry Mount for mounting prints up to postcard size, one 3A Foto-Welder and one squeegee pad.

IN ADDITION to the standard Mendelsohn front shutter synchronization, a new model for the miniature Speed Graphic also provides leads and connectors for focal plane shutter synchronization. The normal operating condition is with two cells in the battery case. However, for using more than one bulb, or in other cases, affecting greater drain on the circuit, an extension tube for extra cell is provided. For further information see your dealer or write to S. Mendelsohn, 202 East 44th Street, New York City.

NOT TO BE confused with the ordinary test for hypo in wash water, a new product known as Fix-Test determines whether or not the hypo solution is exhausted. Furnished in a dropper bottle the solution is put directly into the hypo. Should the hypo cloud up, it is an indication that the bath is not doing its work. On the other hand, if the hypo remains clear it is in good condition and will continue to fix films and papers properly. Fix-Test sells for

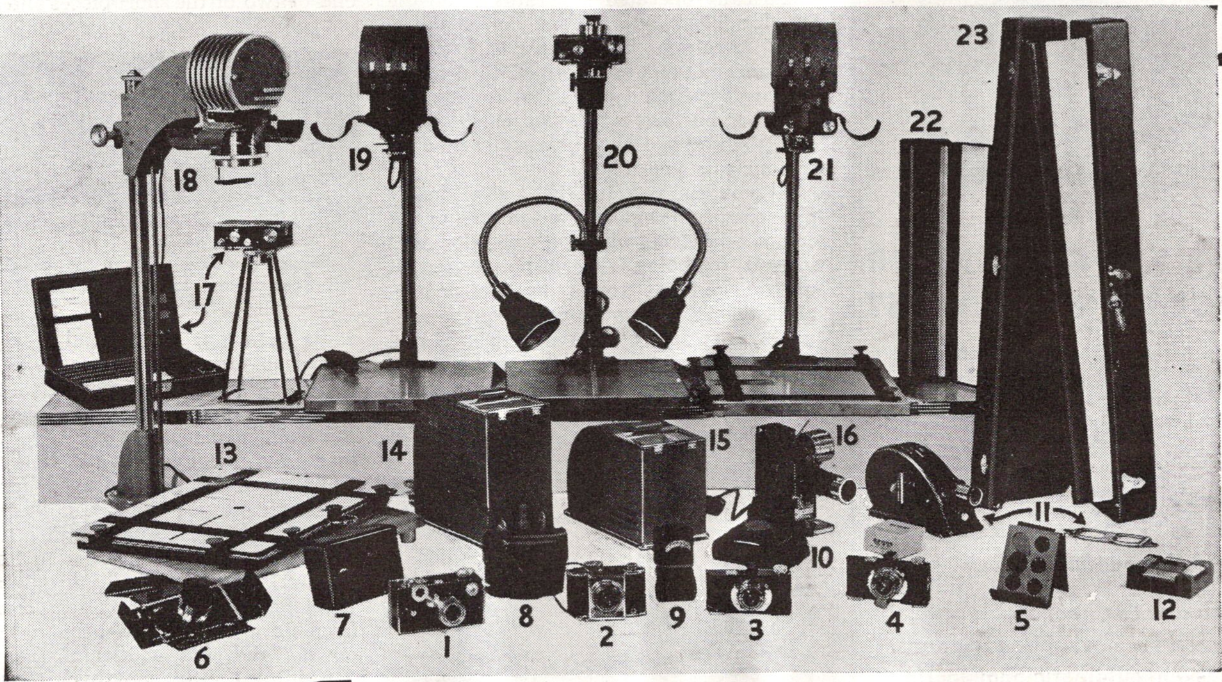
(*Continued on page 94*)

Calendar of Photographic Exhibitions

SALON	ADDRESS	ENTRY FEE	ENTRIES ALLOWED	CLOSING DATE	DATES OPEN TO THE PUBLIC
6th (5th International) Wilmington Salon of Photography	Secretary, Salon Com., Delaware Camera Club, P. O. Box 981, Wilmington, Del.	$1.00	4	Jan. 10	Delaware Art Center Feb. 6—Feb. 26
First Valley of the Sun Photographic Salon sponsored by the Arizona Pictorialists	Tom Imler, Jr., Salon Chairman, 1702 E. Yale St., Phoenix, Ariz.	$1.00		Jan. 15	Feb. 1—Feb. 15
Exhibition of Marine Photography sponsored by Chelsea Camera Club	Robert B. Blaesi, 351 West 21st St., New York City	$1.00	4	Jan. 16	Feb. 6—Feb. 12
International Exhibition of Pictorial Photography, Leicester, England	Mr. H. Foscutt, Exhibition Sec., 19 Doncaster Road, Leicester, England			Jan. 24	Feb. 20—Mar. 11
International Exhibition of Pictorial Photography, Ilford, England	Exhibition Secretaries, 40 Stonehall Ave., Ilford Essex, England	1s. per print		Jan. 28	Mar. 6—Mar. 11
43rd Annual Exhibition of the South London Photographic Society	Hon. Exhibition Sec., H. S. Adams, 40 Stockwell Park Road, London, S. W. 9, England	1s. per print		Jan. 31	Feb. 25—Mar. 25
6th National Collegiate Salon of Pictorial Photography sponsored by Univ. of Wis. Camera Club	Ralph Turner, Salon Chairman, Univ. of Wis. Camera Club, Memorial Union, Madison, Wis.	$1.00	4	Feb. 11	Mar. 5—Mar. 24
4th St. Petersburg Salon of Pictorial Photography	R. Kendall Williams, Salon Chairman, 43—4th St. So., St. Petersburg, Fla.		4	Feb. 15	Federal Galleries Mar. 6—Mar. 26
77th Annual Open Exhibition of the Edinburgh Photographic Society	Hon. Exhibition Sec., 16 Royal Terrace, Edinburgh, Scotland	2s. 6d and postage	5	Feb. 17	Mar. 18—Apr. 1
19th Annual Competition of American Photography.	American Photographic Publishing Co., 353 Newbury St., Boston, Mass.			Feb. 20	
6th International Salon, Albert I, Charleroi	Roger Popularie, 18 rue de l'Egalite, Charleroi, Belgium	5 Belgas	4	Feb. 20	Mar. 26—Apr. 11
8th Annual Boston Salon of Photography	Boston Camera Club, 351 Newbury Street, Boston, Mass.	$1.00	4	Feb. 24	Mar. 25—Apr. 2
2nd Annual Rocky Mountain National Salon of Photography	R. F. Heckman, Sec., Denver Photographic Soc., 1429 Marion St., Denver, Colo.	$1.00	4	Mar. 1	Chappell Hse. Mus. Apr. 3—Apr. 17
6th International Milwaukee Salon of Photography—Photo Pictorialists of Milwaukee	Roy E. Peterson, Salon Chairman, 772 N. Jefferson St., Milwaukee, Wis.	$1.00	4 Prints 10 Slides	Mar. 1	Mil. Art Institute Mar. 17—Apr. 1
3rd Annual Fox River Valley Photographic Salon	*Salon Com., Green Bay Camera Club,* Roy E. Scheils, Salon Dir., 1215 10th Ave., Green Bay, Wis.	$1.00	4	Mar. 1	Mar. 15—Mar. 30
San Francisco International Salon of Pictorial Photography	California Camera Club, 45 Polk St., San Francisco, Calif.	$1.00	4	Mar. 14	De Young Museum Apr. 2—Apr. 30

argus

MEANS MORE THAN JUST A CAMERA



IN THE COMPLETE argus LINE IS EVERYTHING YOU WANT FOR FULL ENJOYMENT OF MINIATURE PHOTOGRAPHY AT LOWEST COST

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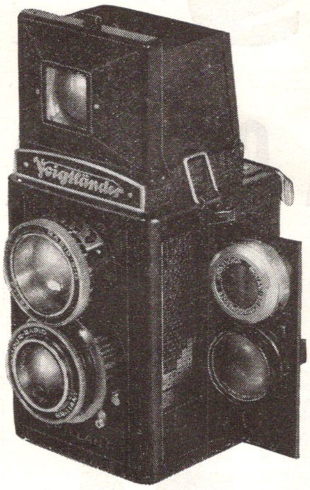

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Make This Quick-Drying Ferrotyper

by Walter Hoag

EVERYONE who makes his own gloss prints has at sometime experienced the desire to ferrotype them in a hurry. Perhaps you have made a batch of pictures and for one of several reasons would like to dry them in a few minutes. Instead, you have to wait several hours or even all night for them to dry.

Of course, nearly any photographic supply house will furnish you with an electrically operated apparatus to do the job for you. But anyone can make a rapid ferrotyper in a couple of evenings the same as I did, for about $2.00. And the apparatus which I am about to describe will turn out prints or enlargements perfectly ferrotyped with practically no curl, in four to seven minutes.

As you can see in Fig. 1 the idea is patterned somewhat along the lines of the commercial type with the exception that instead of being electrically heated it utilizes the flame from a gas stove or hotplate turned as low as possible.

I have two chromium tins 16 x 20 and made the ferrotyper to fit these so that while one tinful of prints is being dried the other one is being made ready. Of course it is imperative that you use chromium tins since the heat would blister the enameled ones.

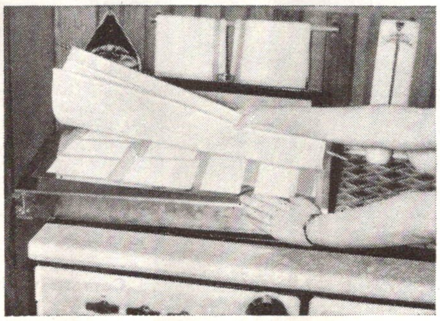


Fig. 1. The completed ferrotyper may be used on the gas range or over hot plate.

The materials required can easily be obtained from the hardware store and tinsmith and consist of the following:

- 1 piece of 18 gauge sheet iron 22" x 20½"
- 2 strips of 18 gauge band iron 18½" x 1"
- 4 pieces of the above 2" long and ½" wide
- 2 small coil springs about 1½" long over-all
- 2 iron rods ⅜" x 24"
- 8 round head stove bolts 3/16" x ½" long
- 1 piece of white light-weight canvas 22" x 19½"

If the sheet iron is purchased from a tinsmith he will probably roll and bend it for you. If you do it yourself, bend it around a wooden template cut from a circle of about a **3-foot radius.** Be sure to *roll or bend it* the short way of the sheet. After this is done put a right-angle bend in each side of the sheet 2 inches from the edge and drill two 3/16" holes in each corner ½ inch from the bottom for the braces that are to go underneath.

These braces are made from the two long strips of band iron. Put a right-angle bend in both ends of each of these and drill holes ½ inch from the end to correspond with those in the curved sheet. The top and braces can now be bolted together as shown in Fig. 2.

A 3/16" hole is next drilled in each end of two of the short pieces and a right-angle bend put in one end of each and bolted to the curved plate as shown in Fig. 3. Round the corners with a file.

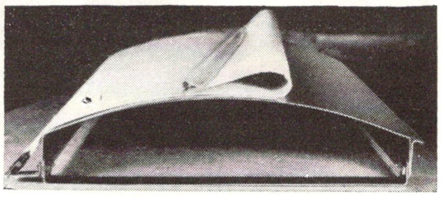
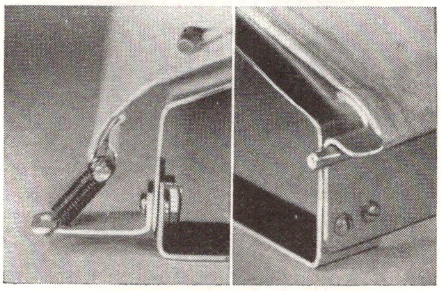


Fig. 2. The curved sheet iron top and the braces, bolted together as shown above.

The two remaining short pieces are for the front hooks shown in Fig. 3A and are made by drilling a 3/16" hole in one end of each and curving the other end in a vise around the ⅜" rod being sure to round off the corners with a file.

All that remains now is to have the wife or girl friend put a ½" hem on the long sides of the canvas to keep it from unraveling and a hem in each end for ⅜" rod, the widths of these hems depending on the length of the springs you obtain. Assemble the springs and rods as shown in the accompanying photographs.

The prints are squeegeed on to the tins in the usual manner and the tin placed on the curved plate face up. If a large blotter is cut to fit and placed between the prints and canvas it will help to keep the heat in and absorb the steam thereby hastening the drying considerably. The canvas is then stretched over the top and slipped under the hooks in front.



Figs. 3 and 3A. The canvas is secured to the ferrotyper in the manner illustrated.

Turn the gas flame of the stove as low as possible and place the ferrotyper over it and in about five minutes your prints will come off the tin with a high gloss comparable to the best of work.—

Drying Glossy Prints

THE mailbag indicates that many readers are experiencing difficulty with some phase of the ferrotyping process, or making of glossy prints. Accordingly, we present herewith a brief, step-by-step description of a ferrotyping procedure which has proven satisfactory to many amateurs.

First, your tin should be spotlessly clean; free from watermarks, dust, lint, hypo particles which may be floating about, and other foreign substances. Any crack in the surface of the tin or any slight rusty places can cause much trouble. Before use, it should be washed in warm, soapy water, rinsed, and dried.

Next, any of several good waxing processes is employed. A small piece of tallow candle dissolved in a few ounces of benzine or naphtha so as to make a thin solution has given good results. Many good waxing preparations are on the market. Apply the wax or polishing solution onto the clean tin and rub it briskly with a soft, clean rag (cheesecloth, etc.). When you have finished this there should be no trace of excess wax or polish appearing on the tin. It should be evenly polished so no streaks or spots appear.

Your prints (made on a good grade of glossy paper) meanwhile will have been washing. They must have washed thoroughly, with no chemical trace of hypo remaining. Take them from the wash water, sponge the print surface to remove any sediment, and place them face down on the tin. They should be fairly wet in order to assure even contact.

At this point it might be well to mention an idea which often helps correct the more obstinate cases of prints sticking to the tin. Just before taking the prints from the wash water, fill a clean tray with water and add a few drops of glycerine thereto. (A 10% solution is often employed.) Then, before placing the prints on the tin, soak them in this glycerine bath for three or four minutes. Now place them on the tin as usual. The glycerine treatment acts to keep the prints pliable, and prevents the emulsion from becoming extremely hard after the prints have dried. Prints so treated will remain somewhat flatter and easier to handle, and will not crack when dry.

Now that the prints have been placed on the tin they are "squeegeed" with a soft rubber print roller to remove excess water. Next, the tin is stood up on edge so the air may circulate freely about it. Your prints will drop off when they are dry.

Various means of rapid or "forced" drying (directing heaters, fans, etc., toward the prints on the tin) may be employed *at your risk*. Occasionally such practice results in uneven drying of the prints, beginning with the outer edges and working inward toward the center. This in turn produces the rings or "oyster-shell" effect occasionally noticed on glossy prints.

We doubt whether *any* ferrotyping process will work perfectly every time. The best men in the business find their glossies sticking once in a while. But the methods set forth above should produce the least possible trouble.—

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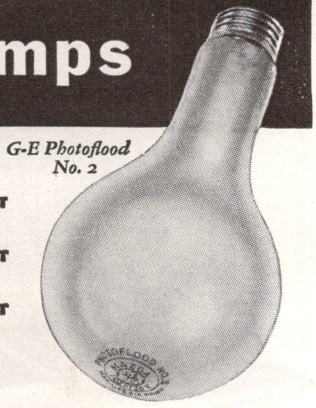

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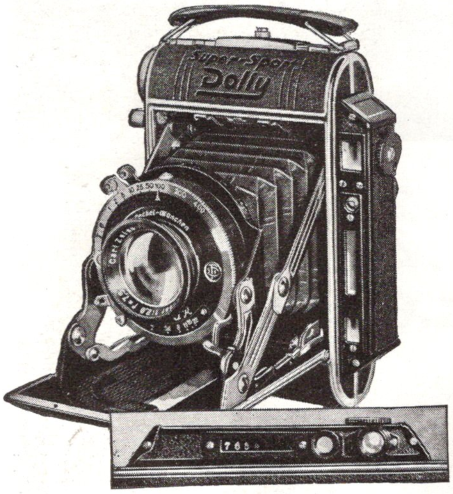

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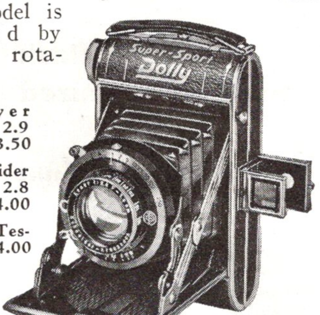

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"Not for Release"

THE life of a publicity photographer is often envied by aspiring free-lance cameramen. A glimpse on the other side of the fence is given by Arthur C. Allen, of Chicago, who sent in the accompanying two pictures as proof that all is not milk and honey in the business of posing and making publicity pictures.

Assigned to get some good shots for a promotion booklet for a girls' camp, he asked for the best tennis player available. He wanted a prime example of good form. The picture below is what he got, in spite of honest and meritorious intentions. The girl missed the ball entirely, closed both eyes, and unfortunately assumed an expression that could be termed anything but attractive.

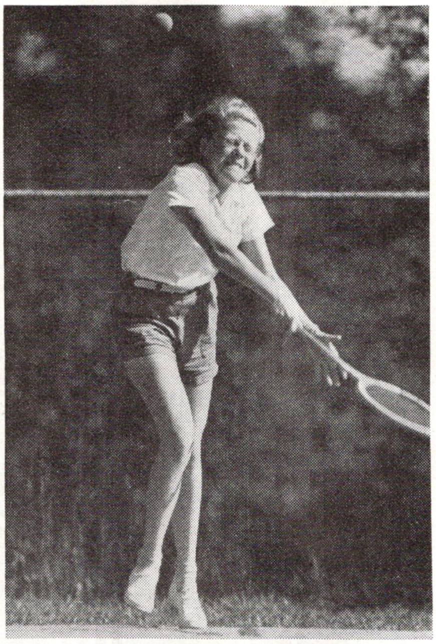
For the technical minded he gives the following data: Camera, 4 x 5 Graflex, 17-inch Dallmeyer telephoto lens; exposure, 1/440 second at *f* 6.3 on Agfa Super Pan Press film.

On another occasion he was attempting a publicity shot of a baseball rooting section for a college. He had the lens of his 3¼ x 4¼ Graflex stopped down to *f* 16. When using a Graflex, one must anticipate action and release the shutter an instant before it occurs. In this particular instance Allen shot shortly after the crack of the bat. With the lens stopped down so far it was a bit difficult to tell exactly what was happening. Later information revealed that the opposition had made a three bagger, much to the consternation of the home rooting section on which the Graflex was trained.

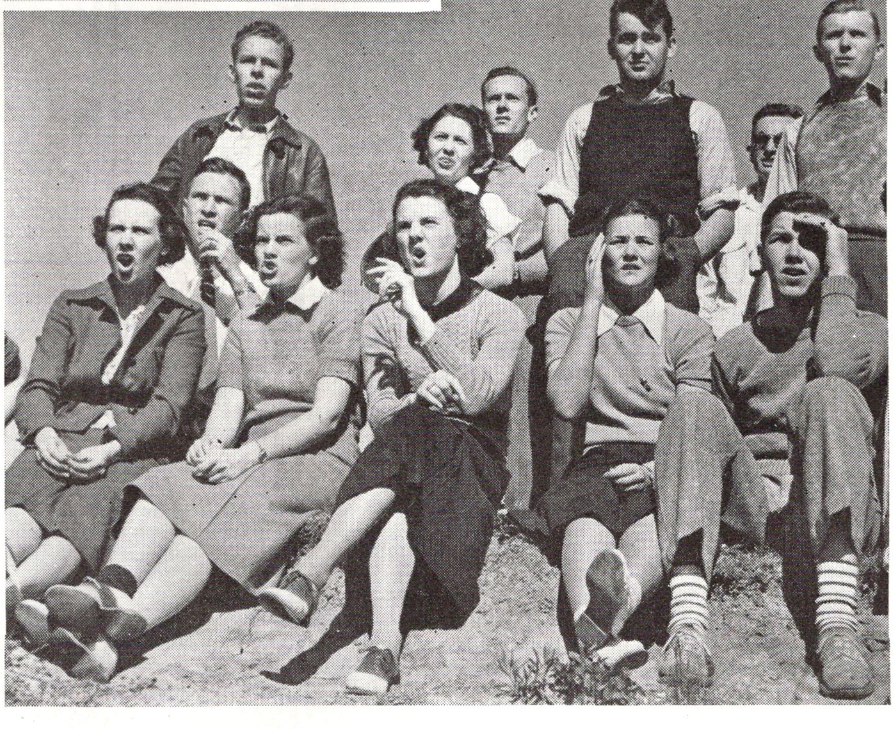
The film records the results beautifully, but not for publicity purposes. The expressions on the students' faces mirror their feelings excellently. He took this at 1/110 second on Agfa Super Pan Press.

Judged by the effects he wanted to produce, the pictures are bad. However, from the viewpoint of human interest they are noteworthy photographs. In Allen's own words, they are "so bad they are appealing."

These are examples of some of the shots that make a publicity photographer tear his hair even though they may be classed as good photographs.—



The model for this publicity shot for a girls' camp became camera-shy and dubbed the scene just as the picture was taken.



Allen snapped this rooting section right after the crack of the bat. He found later that the opposition had made a hit.

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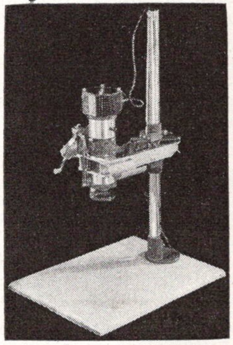

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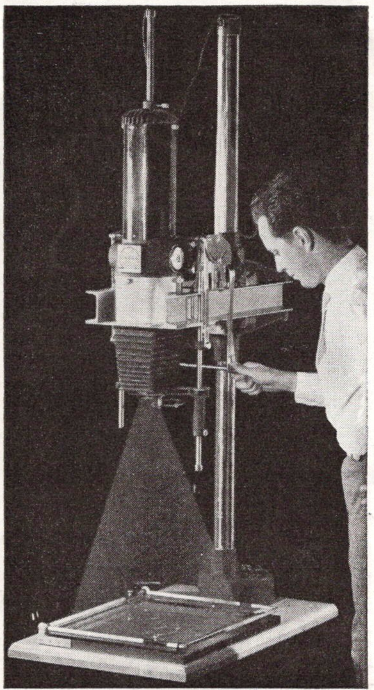

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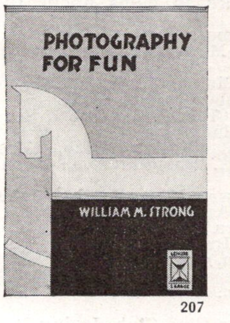
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WILLIAM M. STRONG

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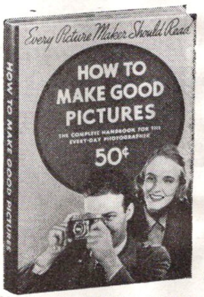
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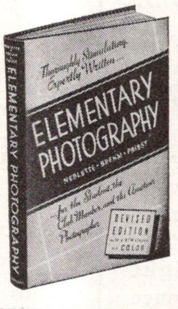
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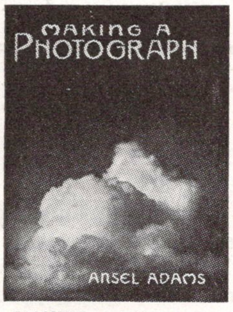
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ANSEL ADAMS

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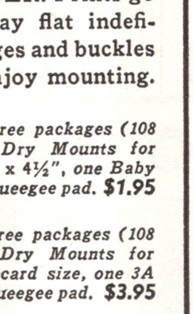

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What the Camera Clubs Are Doing

Baltimore Clubs Celebrate Photography's Centennial

The 100th anniversary of photography was celebrated on Jan. 3 by the camera clubs in Baltimore, Md. Previously, the Baltimore Camera Club had sponsored an "all Baltimore" show, in which were hung prints illustrating photography's application to pictorial, news, natural history, portrait, and miscellaneous subjects. Amateurs and professionals alike contributed to this salon by invitation, in order to show the citizenry what local photographers were capable of doing.

The response to this appeal to civic interest was so favorable (as indicated by attendance and press comment) that the salon will be repeated annually. Further particulars concerning the exhibit may be had from J. S. Rowan, club president, at 2313 Homewood Ave., Baltimore, Md.

Exchange Movies Become Popular

A new departure in the way of exchanges between clubs is a movie film exchange system in operation among ciné clubs in Seattle, New York City, and Washington, D. C. Word received from Dr. I. Rodis, secretary of the Washington (D. C.) 8 MM. Movie Club, indicates that thus far the exchange plan has proven to be both entertaining and constructive.

It is expected that several other movie clubs will have joined the "system" before long. As yet the project does not appear to be organized on any official basis, but this will occur at such time as it becomes necessary to the avoidance of confusion. Further information may be had by writing Dr. I. Rodis, 1726 Eye Street, N. W., Washington, D. C.

Penn State Club Gives Course

The technical advantages inherent in institutions of higher learning seem to have been realized to a noteworthy degree by members of the Penn State Camera Club, composed of students, faculty members, and alumni of Pennsylvania State College.

An interesting instructional course in photography is being sponsored by the club, early sessions having been devoted to study of photographic fundamentals. Each lecture is followed immediately by a practical laboratory demonstration. In this way problems of an increasingly advanced nature may be dealt with during the course, with all participants prepared to enter into each discussion.

Further details regarding this course may be obtained by writing to Ralph I. Cohen, club president, Box 404, State College, Pa.

Tampa Club Welcomes Tourists

A cordial welcome to camera club members who may be wintering in Florida is extended by the Tampa Camera Club. Meetings are held each first and third Wednesday. The club's address in Tampa is 438 West Lafayette St. Newly-elected officers are W. W. Pardue, Horace Rivero, and Keith Howe.

Exchange Exhibit Idea Grows

Word has come from several clubs desiring correspondence regarding traveling exhibits.

The E.P.I.C. Pool of California has over thirty exhibits available for loan to clubs which desire shows at regular intervals. The exhibits now are traveling a regular circuit in nine states. Inquiries should go to Jack Garnett, Room 311, 16 California Street, San Francisco, Cal.

The Marion Camera Club, Marion, O., has a traveling salon, and any clubs wishing to exchange prints may arrange to do so by corresponding with Robert Miley, 203 S. Seffner Ave., Marion, O.

The Massapequa Camera Club, of Long Island, will welcome correspondence from clubs interested in its traveling exhibit of prints which is now being prepared. Address Miss Lucile Eschmer, Sec., Massapequa Camera Club, Massapequa, Long Island, N. Y.

The La Fayette Camera Club is anxious to have other clubs inspect and criticize its prints, and, in turn, will welcome the opportunity of inspecting the exhibits of other clubs. Letters containing constructive criticism of the La Fayette prints have been found especially helpful, according to Robert E. Minshall, club president. The club headquarters are maintained at the Hotel Washington, Washington Court House, O.

Coast Group Plans Salon

Photography's centennial, the 1939 San Francisco World's Fair, and the fiftieth anniversary of the California Camera Club have motivated the club to sponsor the San Francisco International Salon of Pictorial Photography.

The exhibit will be held in the De Young Museum, which is located in famous Golden Gate Park, where thousands of persons will be able to view the prints. For further details readers are asked to refer to the Calendar of Photographic Exhibitions appearing in this issue.

High School Clubs Organize

It is gratifying to learn of the serious, organized efforts along photographic lines being made among young people. Two specific instances of this trend are noted here.

The Junior High school in Clinton, Okla., has among its students a group of nearly fifty camera enthusiasts, who organized last September. For reasons best known to themselves they wish to be known as the *Camera Snoopers*. Under the guidance of a faculty sponsor, the group already has taken several photographic field trips, and other constructive activities are scheduled for the rest of the school year.

The *Lens and Shutter Club*, composed of about fifty pupils at Roosevelt High School in Washington, D. C., has been organized only recently. This group meets once a week "to learn how to take better pictures." Members have access to the school darkroom, where they do their own film processing, printing, and enlarging. Among this organization's scheduled projects is the publishing of a four-page pictorial paper showing the membership's finest work. It is also planned to hang exhibits on the bulletin boards in the front hall of the school.

Third Manhattan Contest Winners

November entries in the Manhattan Camera Club's Inter-Club competition were judged by Robert Desme, Samuel Grierson, and Nicholas Ház. *Outdoors at Night* was the subject. First four clubs, in order of finishing were: The Camera Clique of St. Louis; Chase Bank Camera Group (N. Y.) and Long Island Photographic Society tied for second; Sierra Camera Club.

Correction Received

The correct address of the Argus Camera Club of Chicago is at 170 West Monroe Street, instead of 140 West Monroe Street as we had been advised previously, according to word received from Frank Nilles, Jr., Club secretary.

Additions to the Roster

We take pleasure in making the following additions to the camera club roster. Judging from the correspondents' names, the ladies are coming to be among the most enthusiastic members in clubs about the country.

Crown Point Camera Club, Miss Leona Steeb, Sec., 317 S. Main St., Crown Point, Ind.

Tucson Camera Club, Mrs. A. E. Magee, Sec., 1033 Penn Place, Tucson, Ariz.

The 8-16 Movie Club, Louis Sobel, Sec., 4916 Ormes St., Philadelphia, Pa.

Mountain Lakes Camera Club, Mrs. Eugenia Beane, Sec., Boonton Ave., Boonton, N. J.

The Photo-Fellows, Miss Dorthy Jobe, Sec., 5041 Davison Ave., St. Louis, Mo.

El Charro Camera Club, Miss Lucy Celaya, Sec.-Treas., Brownsville, Tex. (No street address given.)

Sault Ste. Marie Camera Club, R. F. Goodall, Sec.-Treas., Box 994, Sault Ste. Marie, Ont.

Brooklyn Amateur Cine Club, Irving Pollack, Pres., 913 St. Marks Ave., Brooklyn, N. Y.

The Minni M's, Miss Norma Lee Cox, Sec., 1725 East Seventh St., Long Beach, Cal.

Housatonic Camera Club of Shelton, Derby, Ansonia, and Seymour, Conn. Theo. J. Von Sabo, Sec., 116 Prospect Ave., Shelton, Conn.

Lorain Camera Club, Bob Carek, Sec., R. D. No. 2, Lorain, O.

Most of the organizations listed have expressed the desire to exchange correspondence and ideas with other clubs.

Bank Employees Form Club

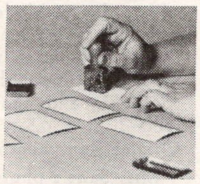
AS further evidence of the important part photography may play in fostering *esprit de corps* within large business organizations, the *First Foto Fans* camera club recently was founded by employees of the First National Bank of Chicago. Veterans as well as newcomers in point of service are numbered among the enthusiastic membership of about 75 persons, of whom nearly one quarter are women.

Bank Messenger Robert Johnson (left) gets some technical pointers from Vice-President Leland L. Hobbs. Both exhibited prints in their club's first salon.

The club recently hung its first exhibition of 125 prints in the bank gymnasium, with over 1,000 ballots being cast during a week's popular vote for three cash prize awards.

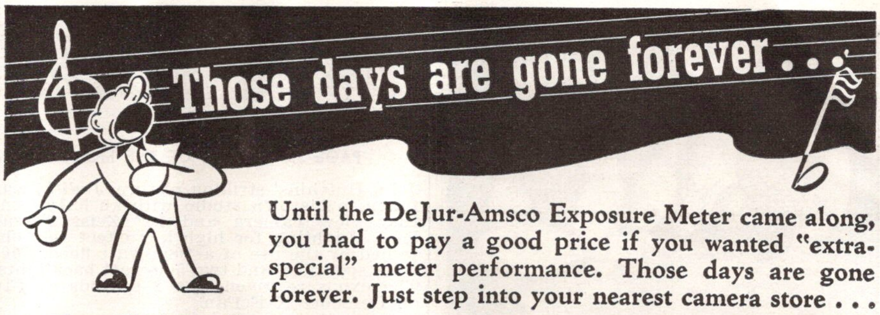
A considerable amount of the program material at the semi-monthly meetings has been furnished by more advanced workers among the membership, and has included lectures and demonstrations by the latter. A great variety of equipment is represented, with a majority of the people doing their own finishing or having it done for them by fellow-members. Correspondence intended for the *First Foto Fans* may be addressed to Mr. Grasso, Country Books Department, First National Bank of Chicago, Chicago, Ill.

Date Your Prints



Rubber stamp dater.

A PICTURE is often more interesting if you know the date on which it was taken. Of course it is not always necessary to know the date of every snapshot, but it is nice to know when a certain one of young Johnny was made, or when those of the beach party, picnic, or some other event were taken. Writing with a pencil on the back of a print may spoil the surface of the picture. You can purchase a rubber stamp dater and stamp pad at the five and ten cent store for 20c. Use it on every batch of prints and you won't regret it ten years from now when your friends ask, "When was this one taken?" It's an easy matter to set the stamp to the date which you have recorded on your envelope of negatives.—*Robert W. Roggenburk, Lakewood, Ohio.*


Those days are gone forever . . .

Until the DeJur-Amsco Exposure Meter came along, you had to pay a good price if you wanted "extra-special" meter performance. Those days are gone forever. Just step into your nearest camera store . . .

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The Wonder Meter at the Wonderfully Low Price of

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Calculator dial contains 19 film speeds . . . takes care of almost all shutter speeds from 1/1000 second to 60 seconds. Twenty combinations of F stops. Photo-cell is arranged to eliminate "sky-shine". Shutter time and F stops for motion pictures and the most commonly used films and their speeds are found on the back plate . . . no need to consult instruction books. The DeJur-Amsco Exposure Meter weighs 2¾ ounces, and it measures 2½" x 1¾" x ⅞".

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This is one of many features in the **FEBRUARY Issue**

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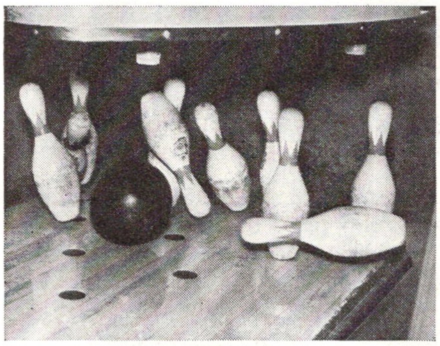
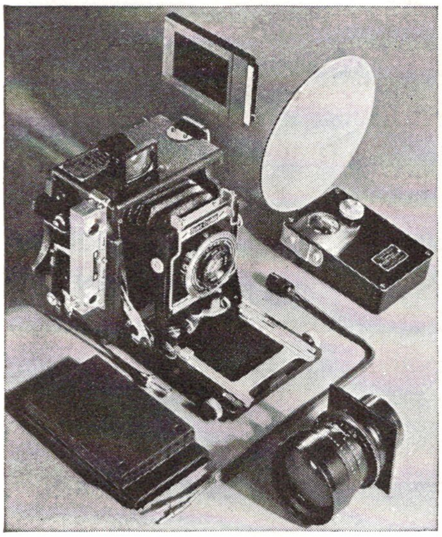


A TEN-STRIKE
with a Miniature 2¼x3¼
SPEED GRAPHIC

The picture above, taken by Walter F. Chappelle of Buffalo, N. Y., dramatically illustrates the remarkable capabilities of the Miniature 2¼x3¼ Speed Graphic with built-in focal plane shutter flash synchronization. Shot at 1/1000 at f.8, this really small Speed Graphic "froze" action that's too fast for the eye to follow! When equipped with the accessories shown below, the Miniature 2¼x3¼ Speed Graphic is as fine and versatile a camera as you can buy.



Full Line of Accessories

These accessories give the Miniature 2¼x3¼ Speed Graphic utmost versatility, convenience and usefulness: special internally coupled range finder for fast, easy focusing; battery case-and-reflector unit for night photography; connecting cord for plugging this unit into the focal plane shutter synchronizing outlet built in the camera back; extra lenses including telephoto; extra lensboards; Graflex and Graphic film pack adapters; Graflex and Graphic film holders; Graflex cut film magazines and carrying cases.

FREE! Send for FREE catalog of Graflex American-made, Prize-Winning Cameras and FREE Miniature 2¼ x 3¼ Speed Graphic folder. Paste coupon—or write your request—on penny post card, if you wish. Folmer Graflex Corporation, Dept. PP-20, Rochester, N. Y., U. S. A.

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GRAFLEX Prize-Winning CAMERAS

Notes on the Salon Section

PAGE 39—PICTURE OF THE MONTH

John Hutchins' striking picture, *Judith*, was taken in his own studio with an 8x10 Century view camera and 10″ Zeiss Tessar lens. Lighting for high key effect was obtained by the use of a 1000-watt flood, 500-watt spotlight, and two 500-watt backlights. The exposure given was 2 seconds at *f* 16 on Defender X-F Pan.

PAGES 40-41—R. P. S. EXHIBIT

No technical data is available on these salon prints from the Royal Photographic Society Exhibit. Salons of this kind concentrate upon the presentation of photographic art without consideration for the means by which it was achieved. They are intended to be educational in an artistic sense rather than to afford technical instruction, and serve as graphic illustrations of the quality of work acceptable to the jury of the highest annual photographic exhibition event.

PAGE 42—WINTER

Bernhard Benson's photograph entitled *The Charm of Winter* was taken with a 2¼x3¼ Plaubel Makina II-S camera and 4″ Plaubel Anticomar *f* 2.9 lens. He used Agfa Super Plenachrome film, making an exposure of 1/50 second at *f* 11.

The Road Home was taken with a Leica camera and 50 mm Summar *f* 2 lens on Agfa Super Plenachrome film. The exposure was 1/50 second at *f* 9.

PAGE 43—BRIDGES

The photograph of the Triborough Bridge by Ben Schnall was taken with a 5x7 Deardorff view camera and 6″ Protar wide-angle lens. The exposure made was 2 seconds, with the lens stopped down to *f* 64, on Defender X-F Panchromatic film.

S. Sesolo's picture shows a night study of Sydney (Australia) Harbor Bridge taken from the north shore by illumination from the bridge and street lighting. The circular quay and clock tower of the post office are clearly visible in the middle distance.

The shot was made with a 2¼ x 3¼ Series B Graflex and Ross-Kodax 5½″, *f* 4.5 lens. An exposure of 30 seconds at *f* 4.5 was made on Ilford Selo Fine Grain Panchromatic film.

PAGES 44-45—SAM

The splendid series of cat pictures by Edward Quigley were taken with a 3¼ x 4¼ R. B. Auto Graflex camera and Kodak Anastigmat *f* 4.5 lens on Eastman Super Sensitive Panchromatic film.

Wonderment. Taken at 1/35 second, *f* 8. Illumination, light from window. An expression provoked by a house fly.

Back Up. Taken in the sunlight indoors. Exposure, 1/40 second at *f* 8. To make Sam assume this attitude a friend of the photographer held a dog nearby. When Quigley was ready to shoot, the friend edged closer to the cat.

Who's That? Made with the light from two windows plus two Photoflood lamps, 1/30 second at *f* 6.3. Sam's first adventures with a mirror were very exciting. He would get against the glass and feel with a paw in back of the mirror for the other cat. Then he would back off, run and jump on the glass in an attempt to crash through.

Making The Fur Fly. Taken in sunlight, at *f* 8, 1/50 second. Just a candid shot of Sam scratching. It was taken in the spring when animals shed their winter coats.

Stalking A Bug. Illumination, light from a window; exposure, 1/40 second at *f* 6.3. Sam killed the dragon fly first. The insect was then attached to the opposite side of the screen.

Angry. Taken at 1/75 second, *f* 11 in August sunlight. Sam is a very nervous cat and it needed only someone to make menacing gestures to produce this expression.

PAGE 46—GULLS

The photograph by Bernhard Benson, *Racing the Storm,* was taken off the coast of Norway with a Leica camera and Summar *f* 2 lens. The shot was made from the back of a steamer during the approach of a heavy storm. The exposure was 1/100 second at *f* 4.5 on Agfa Superpan film. This picture has been hung in many salons.

K. Guther photographed the gull on the shore of the Baltic Sea, using a Rolleiflex camera. He stopped action by using a shutter speed of 1/250 second.

PAGE 47—MUSCLE

H. M. Weis photographed the stevedore at Pensacola, Florida. He used a Voigtlander camera and Skopar *f* 3.5 lens. This is a candid shot, the camera being hand held and shot from the hip.

S. K. Koparkar made the picture of the boatman with a quarter-plate Dallmeyer Press Reflex camera and 6″ Dalmac Anastigmat *f* 3.5 lens. The photograph was taken in open sunshine on an orthochromatic plate, the exposure being 1/100 second at *f* 8 with an Optochrome filter.

PAGE 48—SURF

The photograph by M. Arthur Robinson was taken with a 4 x 5 Graflex camera and Carl Zeiss *f* 4.5 Tessar lens on Eastman Panchromatic film. The exposure was 1/500 second at *f* 6.3.

Werner Stoy photographed the Pacific breaker with a Contax camera and 85 mm Sonnar *f* 2 lens. The picture was taken from the pier at Long Beach, California, just about 20 minutes before sunset. He used DuPont Superior film and made an exposure of 1/200 second at f 4.

PAGE 49—SENTINELS

War Thunder, by Joseph Margraff, was made with a Leica camera and 50 mm Elmar *f* 3.5 lens. The shot was made on Agfa Finopan film at an exposure of 1/100 second at *f* 6.3. Margraff made numerous exposures each with a different cloud formation. The one shown was selected as being the most powerful and dramatic.

Bernhard Benson's photograph, *The Witch Tree,* was taken in Glacier National Park 5000 feet up on the mountain side above the timber line. He used a 2¼ x 3¼ Plaubel Makina II-S camera and 4″ Plaubel Anticomar *f* 2.9 lens. The exposure given was 1/50 second with the lens stopped down to *f* 11. Agfa Super Plenachrome film was used. This picture has been exhibited in a number of salons.

PAGE 50—NUDE

The study by Dudley Lee was made in his New York studio with a 3¼ x 4¼ Graflex camera and Zeiss Tessar *f* 3.5 lens. The subject was posed and illuminated with three 1000-watt floodlights. In addition a 1000-watt spotlight was used. Defender X-F Panchromatic film was used and the exposure given was 1/25 second at *f* 6.3.

THE FEBRUARY COVER

This month's cover illustration was made from a Kodachrome transparency by Ruth Sage, New York illustration photographer. It was taken in her studio with a Leica Model G camera and 50 mm Summar *f* 2 lens on Type A (indoor) film. Illumination was furnished by one 1500-watt floodlight and a 1000-watt spotlight, and the exposure was 1/40 second at *f* 4.5. The young model is Charles Kent Beckmann.

Miss Sage's photographic career dates back to her grade school days when her father, an amateur photographer of the glass plate era, presented her with a small Brownie camera and taught her how to develop and print her pictures. As her interest in the hobby grew she improved her equipment. Her first commercial venture was making the various group pictures for the high school year book. Today illustrations from the Sage Studio appear in national advertisements which are published in the country's leading magazines.

Static Friction One Cause of Pinholes

EVER since I've had my filmpack camera, pinholes have been the bane of my photographic existence. Every known method was tried to prevent these disfigurations from raising their ugly heads in my negatives. The developer and fixer were strained through porous filters. The interior of the camera was thoroughly vacuumed. Different brands of film packs were used. All to no avail.

It's a known fact that it is humanly impossible to clean out all the dust from the interior of a camera. Dust particles will cling to the surface and remain there unless disturbed. Ordinary handling will not bring about this disturbance, however, and here is the answer to the mystery. If the tab of a film is pulled too violently, the film is charged with static electricity which immediately attracts all dust particles. The particles naturally prevent light from striking the film and thus leave small, clear holes. Since I have used less violent methods, not one pinhole has appeared. — *Theo. J. Von Sabo, Shelton, Conn.*

Spiders' Webs

(*Continued from page* 12)

to get a large image. If your camera does not have a double extension you can remedy that by rigging the lens on the end of a tube six or eight inches long and running the tube through the hole in the lens board. (That, by the way, is the dodge I used on my single extension 3¼ x 4¼ Graflex, the camera with which the accompanying illustrations were made.)

Now you are ready for the dew drops. Any little insect spray gun will work. Fill the gun with clean water and gently spray the web. Not from too near, or you will blow it to pieces. Four or five feet away is about right. Tiny beads of water will begin to form on it after three or four minutes of spraying. They need not be very large—no larger than pin heads—since they will be much more than natural size when you print them. If you spray for too long they will drop off. A good rule is to spray until you see one tumble, and then quit.

Before making the exposure, another thing is essential. Take something white—a two-foot blotter, for instance—and place it against the black background just out of camera range. The blotter will be reflected in the bottom of every droplet, giving them contour and depth, and keeping them from looking like soap bubbles.

That is all there is to it, except that you must hurry so that the *dew* does not evaporate before you have the picture. If you use finegrain film and a stop of *f* 32 with two photofloods in reflectors at a distance of two and three feet respectively, an exposure of about fifteen seconds should be sufficient. Develop the film in finegrain developer and you can print to 11 x 14 or 16 x 20 and only you and the spider need know what size web you used.—

Careful, Thoughtful Planning

. . . this is the constant guiding principle of the men who build the Leica, a principle characteristic of this camera's high standards of precision. Leica, itself, is the result of years of experimentation, of careful planning, of a burning desire for perfection. And its soundness of design has given new impetus to photography . . . changed its entire course. Start "Leica-ing" today.

In the Model IIIb Leica, the view finder and range finder eyepieces are placed close together, requiring but a flick of the eye to change from one to the other. You have the benefits of rapid operation—yet, at the same time, a separate, magnified range finder field, making focusing simple, quick and highly accurate.

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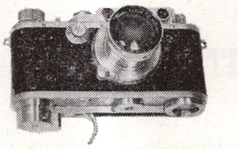
Leica



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Illustrated is the Leica Model IIIb, with Summar f:2 Lens and Rapid Winder.

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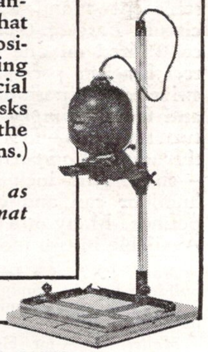
Write for your FREE copy of "Leica Photography", as well as complete information on Valoy and Focomat Enlargers—Dept. A-2.



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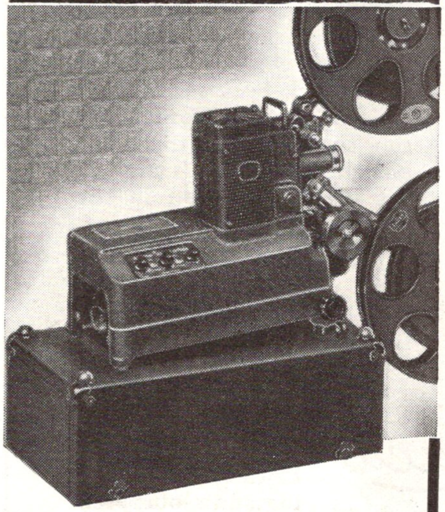

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A Glossary for Photography

NON-HALATION BACK. A dye coating on the back of film which prevents reflection and consequent scattering of light which has passed through the film. This coating dissolves during development.

NOODLES. See Worms.

NORMAL. In optics, an imaginary line perpendicular to the surface of the reflecting or refracting medium if that surface is plane. If the medium has a curved surface, the normal is an imaginary line perpendicular to a tangent to the curved surface at the point of reflection or refraction.

NORMAL SPEED. In moving picture photography, the number of frames exposed per second for ordinary filming; 16 per second (silent), 24 per second (sound). See Film speeds.

NORMOS. The tradename of a lens of the DAGOR type.

NORRIS, J. HILL. In 1856 introduced a process of making dry collodion negatives.

NOTAN. A Japanese word adopted into English to express the collective effect of light and dark areas in a composition; see also Chiaroscuro.

NUDES. In photography, posed photographs of human subjects without clothing or with a minimum of clothing. There is a subtle distinction between nudes as a class of photographs and photographs which merely depict nakedness.

O. Chemical symbol of OXYGEN.

OBJECTIVE. A term sometimes applied to the image-forming lens of an optical instrument; for example, the lens used on a camera or enlarging apparatus.

OBJECT PLANE. That plane at right angles to the axis of the lens which includes the object critically focused.

OBJECT POINT. The smallest portion of the surface of an object which is capable of reflecting light to the lens.

OBJECT SPACE. The object space is that conical portion of space included in the angle of view of the lens and extending from the lens for an indefinite distance.

OBSERVATIONAL DEVELOPMENT. Development of prints or negatives until the strength of the image is judged to be sufficient by inspection; this method is advisable for experienced photographers only. Other methods of development are FACTORIAL DEVELOPMENT and TIME AND TEMPERATURE DEVELOPMENT. Observational development is also called Development by inspection.

OIL OF LAVENDER. An oil which was used as a solvent when the bitumen process was in its infancy; oil of spike lavender was also so used.

OIL OF MIRBANE. See Nitro-benzene.

OIL OF TURPENTINE. Same as Turpentine.

OIL OF VITRIOL. See Sulphuric acid.

OIL PRINT. The print produced by the OIL PROCESS.

OIL PROCESS. A swelled gelatin process in which the image is composed of pigments ground in oil, which are rejected by the swollen gelatine but are absorbed by the dry gelatin which has absorbed no water. It is a predecessor of the BROMOIL process.

OIL TRANSFER PROCESS. A photographic process similar to the BROMOIL TRANSFER or COLLOTYPE processes, in which the pigmented image produced in the oil process is transferred to another support by means of pressure.

OMAG MODULATOR. The trade name of an auxiliary lens which introduces softness into a negative without obvious diffusion. It may be secured with clear glass or incorporated into a filter.

OMNAR LENS. The trade name of a modified GAUSS lens.

ONE-SHOT CAMERA. See CAMERA, one-shot.

OPACITY. The light-retarding power of the silver deposit in a negative; the inverse of the transparency of this deposit. Technically, the anti-log of the density.

OPAL GLASS. A translucent milky glass used in enlargers to diffuse light before it reaches the negative.

OPALINE. A term applied to photographs prepared by squeegeeing a glossy print into optical contact with a glass plate having a bevelled or ornamented edge.

OPAQUE. (1) Incapable of transmitting light. (2) A pigment used to block out an undesired portion of a negative.

OPERATING ROOM. See GALLERY.

OPIC LENS. The trade name of a modified GAUSS lens.

OPTICAL AXIS. The optical axis is the imaginary line joining the centers of the two spherical surfaces of a lens; also called the principal axis. A ray of light entering the lens along this path will continue through the lens and emerge without being bent or refracted.

OPTICAL CENTER. The point, generally within a lens but sometimes exterior to it, at which the optical axis and all secondary axes cross.

OPTICAL CONTACT. The cementing together of two surfaces, so that there is no air space between them.

OPTICAL FILTER. See FILTER, optical.

OPTICAL FLARE. Same as Flare spot.

OPTICAL LANTERN. See MAGIC LANTERN.

OPTICS. That branch of science relating to the nature and laws of light.

ORANGE FILTER. See FILTER, orange.

ORANGE LIGHT. ACTINIC light filtered to obscure all but the orange rays; if not too brilliant, it may be used with slow plates and paper.

ORTHOCHROMATIC. A term used to describe films or plates whose sensitivity has been extended to include greens and yellows through the use of emulsion dyes.

ORTHOCHROME T. A basic emulsion dye, one of the ISOCYANINE series, whose chemical name is *p*-toluquinaldinequinolinmethylcyanin. It increases the sensitivity of the emulsion in the green and yellow wave-lengths.

ORTHOCRESOL. See CRESOL.

ORTHO-DIHYDROXY-BENZENE. $C_6H_4(OH)_2$. Same as Pyrocatechol.

ORTHO-HYDROXY-BENZENE. $C_2H_4(OH)_2$. Same as Pyrocatechin.

ORTHOMETAR LENS. The trade name of a lense of the same general design as the PLASMAT lens.

ORTHOPHOSPHATE OF POTASH. Same as Potassium phosphate.

ORTHOSCOPIC. Completely corrected for all DISTORTION.

ORTHOSCOPY. Complete lack of distortion; perfect similarity between object and image.

ORTHOSTIGMAT. The trade name of a lens of a modified DAGOR formula.

ORTOL DEVELOPER. A developing agent which is a mixture of hydroquinone and methylorthoaminolphenol. Ortol resembles pyro both in the color of the image it develops and in the progressive appearance of the image.

OUNCE. A unit of weight common to the three systems in use in the U. S.—avoirdupois, Troy and apothecaries'. The avoirdupois ounce is equal to 28.349527 grams; the Troy and apothecaries' ounce are each equal to 31.103481 grams.

OUNCE, FLUID. See FLUID OUNCE.

OVEREXPOSURE. Excessive duration of the interval in which light is allowed to act on a sensitive surface in making either a negative or a print. Overexposure results in excessive density, a shortened tonal scale and lack of detail.

OVERLOAD. To supply to a projection lamp electric current of greater voltage than that for which the lamp was made. Overloading means increased brilliancy but shortens the life of the lamp. See UNDERLOAD.

OXALATE DEVELOPER. Same as Ferrous oxalate developer.

OXALATE OF IRON AND AMMONIA. See Ferric ammonium oxalate.

OXALIC ACID. $(COOH)_2+2H_2O$. An organic acid used in PYRO and ferrous oxalate developing solutions and in preparing certain stable salts such as potassium oxalate.

OXIDES. The compounds of oxygen with some other element—for example, carbon dioxide (CO_2). The oxides of the alkali metals form hydroxides when dissolved in water.

OXYCALCIUM LIGHT. See LIMELIGHT.

OXYGEN. O. A gaseous element; one of the most widely distributed and abundant of the elements, forming 23 per cent of the air, and roughly 90 per cent, by weight, of water. It is an important constituent of many of the chemicals used photographically and is responsible for the oxidation of developing solutions when exposed to air.

OXYHYDROGEN LIGHT. See LIMELIGHT.

OXYMETHYL-PARAMINOPHENOL SULPHATE. Same as Edinol.

OXYPHENIC ACID. Same as Pyrocatechol.

OZALID PROCESS. A process similar to CYANOTYPE, invented by G. Kögel, utilizing diazoanhydrides or nitro- or sulphonic derivatives of naphthalene as the sensitizing agent. The prints produced by this process are developed and fixed by gaseous ammonia.

(To be continued next month)

Coroner

(*Continued from page* 59)

"In all violent deaths where the question of homicide arises," he declares, "skillful use of the camera is of primary importance, not only for recording facts at the scene of the death (or where the body is found), but also in establishing related facts: the condition of an automobile suspected of having been used in the case, for instance.

"This type of photography requires that all possible care be taken to prove that the 'camera does not lie'. A single instance of facts misrepresented through careless manipulation of the camera may create a disastrous miscarriage of justice, no matter how keen and careful the personal investigation of the authorities. One kind of evidence always should be checked against the other."

The photographer who works on the coroner's assignments does not seek the gruesome; it drops in his lap whether he likes it or not.

"Traffic cases, drownings, bodies of unidentified people discovered dead apparently from natural causes—all are proper subjects for the coroner's macabre photography," Crabtree says. "So many things can happen either to surrounding objects, or to the body itself, that you cannot be too careful in covering this sort of an assignment.

"Often the identity of the victim of an accident can't be established without broadcasting a faithful likeness and description. This is true particularly of hit-run victims, whose conscienceless killers are naturally bound to do as little as they can to focus interest on the case. Luck is often with us in these cases, since this type of fatality often leaves the features unmarred—a different result from that usually seen in traffic smashes and grade-crossing deaths."

Multnomah county is no mere back yard to Portland. It runs easterly along the Columbia River Valley about 40 miles, westward about 12 miles and comes closer to the city along an irregular boundary to the south. Perhaps a midnight call may take Crabtree, his tripod, and cameras to a service station where he can plug in and use flood-lights; or he may have to do the best he can with flashbulbs in some rock-ribbed canyon that crawls in dark and dismal declivity towards the river.

"The simple equipment which is adequate for our type of work can be listed briefly," he says, "but first of all comes an exposure meter. I wouldn't take a chance on bringing home what I might get without it. And of course, I always have time to use it, because my business is not shooting the 'quick' but the dead —and their surroundings.

"I employ the meter with the idea of getting all important objects within camera range illuminated as evenly as possible; just enough to give me a solid print, but avoiding deep shadows. I always focus on groundglass, employing a 3¼ x 4¼ Speed Graphic much of the time. This is equipped with a movable

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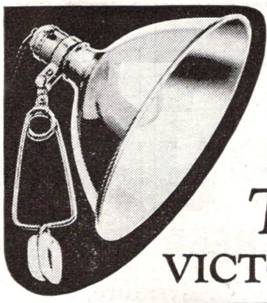

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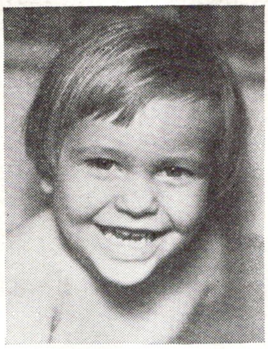

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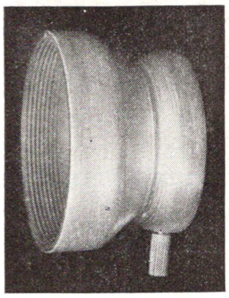

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lens board, and I generally use a Goerz Dagor lens.

"I also use a 5 x 7 job. While it may provoke comment, I can say dogmatically that I much prefer the older type of large camera for this work rather than any candid or miniature boxes. The latter are not so well adapted to the peculiar conditions I must face.

"Speed shots are nearly unheard of in our routine. *Life* ran an action shot of a killer, showing him dashing from a patch of woods across a road. There followed a picture of him dying where an officer had shot him. But this sort of photography figures in official records about once in a million times. If you were to accompany me day after day you would find me doing simple sharp-focus shooting with a comparatively slow shutter at *f* 11 or *f* 16.

Regarding the function of a crime picture in court or under detective inspection remote from the scene, Crabtree points out several angles which may not occur even to the seasoned professional.

"Halation, silhouette or confusing highlights must be eliminated as far as possible," he says. "Working in close quarters, with uncertain light sources, this is often a problem. Wide-angle lens work is imperative in the cramped spaces indoors where bodies are often found after hold-up murders or planned killings.

For speed and facility in development he employs cut film, either portrait pan or super-pan. Wherever feasible he prefers to use the 5 x 7 box, especially where a number of surrounding objects may be vital as evidence. "This," he claims, "avoids much trouble due to gross foreshortening, cast shadows and the like. It must be remembered always that the body is the center of the composition."

Everyone of Crabtree's calls presents a problem in photographic technique. It may be a child's body half-hidden by brush in some remote gulch, or a half-dozen relics of human existence strewn over a railway intersection. A general picture, to present the relation of the body, or bodies, to the surroundings, is a basic requirement. Then follows closer work such as would be suggested by the experience of the trained investigator, to reveal signs of struggle or similar telltale conditions.

Interiors must show important articles of furniture, instruments of death (where present in the immediate scene), and other details, preferably in combination with a view of the body as it is found.

The panel of a door may have been hacked or marred. Crabtree shoots it, because it may establish that the murdered person was slain in self-defense. This occurred in a recent case which Crabtree describes.

"It isn't pretty to photograph a colored man choked to death with his wife's silk nightgown. There may be a tendency to think the lady was no unprejudiced person. But a jury exonerated the wife of a Negro porter who was thus strangled because in a drunken frenzy he tried to *batter* his way into her room with an axe, and our photographs substantiated her story of at least a plausible self-defense. Whether she was in *immediate* danger when she throttled him is important, of course, but the jury did not seem to think so, and freed her."

In the medico-legal aspects of evidence which must be developed after bodies are brought to the morgue, Deputy Crabtree has kept well abreast of modern procedure, despite his limited equipment. A case in point is the notorious Fannie Madison murder which shocked Portland.

Mrs. Madison's bruised and bloody body was found on a basement stair landing by her terror-stricken, 12-year-old step-daughter, Bessie.

As the Oregon Journal graphically put it, the case presented a "weird composite of brutality, tragedy and bitter pathos."

Deputy Crabtree, Chief Sheriff's Deputy Christofferson, Deputy District Attorney John Collier, and Oregon's famed pathologist, Dr. Frank Menne, went over the spattered house that had been occupied by Mads Madison, his little girl, and the woman who had become his second wife early in September. He told of a quarrel over the child as they sat wrapping Christmas parcels before a partly trimmed tree on the evening of December 23. He claimed his recent bride had become angry at his plea that the girl be allowed to "ditch" school to practice for a holiday play.

"I could kill you," he claimed the woman cried, coming toward him with a pair of shears.

At the end of the fracas he thought (or so he said) Fannie Madison was still alive as her body thudded to the landing. But her merely falling against the tool box in the kitchen could not have imbedded a file six inches in her brain. And it developed that Madison held a double indemnity insurance policy on her life, written in his favor. He pled guilty to second degree murder.

"Both Mr. McDonald and I have harrowing, but damning evidence that this was no mere accident," says Deputy Crabtree. "The finding of charred relics of a sweater Madison (a WPA musician) used to mop up blood, along with other strong circumstantial evidence, only fortified what the camera revealed.

"Mrs. Madison's arms showed peculiar gouges and bruises caused by what appears to have been a stick of wood jabbed and beaten over her head. The resected skull, especially as enlarged in photographs, tells its mute and ghastly story. Had Madison, instead of stolidly confessing, chosen to fight the case, he would have had a hard time explaining those damning photographic prints.

Crabtree has one pet use to which he believes photographic evidence should be put far more generally.

"To my mind," he says, "this sort of evidence should be carefully gathered in one special sort of death case. Its increase is a terrible indictment of the average citizen's right to own and operate an automobile. I refer to traffic accidents.

"For years I have made a study of these fatalities and have filed away the camera story of this death toll. Could we but bring home to the rank and file, and particularly to those entrusted with making and enforcing our laws, what flying, 100-horsepower death does to the human body, perhaps eventually we could get some measure of justice where now there seems to be little or none.

"How to fix blame, establish a record of culpable negligence, and then standardize a penalty that will really penalize, is a problem we have not even touched. Look at some of these pictures of the helpless aged and of blithe young girls battered into eternity by hit-run drivers. They tell a shocking story of our speed madness and selfish disregard of human rights, indeed!

"If camera fans throughout America would cooperate in a movement to nail this menace, I believe that whatever obstacles need be mastered in order to understand 'shooting for the coroner' would become markers of humanitarian progress towards suppression of the ghastly toll of traffic deaths.

"This is a phase of death-photography that I feel very keenly about," says this man whose daily routine brings him into contact with every variety of demise. "Establishment of a technique must be worked out, not only for the actual picture-taking, but for the maintenance of records which will help put homicidal drivers where they belong. And the sooner the better.

"All my records are filed in serially-numbered folders as the cases pass under observation. Prints are included with the formal typed and written statements covering each mortality, whether it has been homicidal, accidental, or entirely natural. For camera users who wish to build up a technique and perhaps make saleable collections to certain illustrated magazines, both in the pictorial and in the detective fields, I can think of no worthier training than that of accident photography—particularly of traffic cases, wherever accessible.

"If you can see this crusade as I see it, and will back your feeling toward the bloody business with persistent camera work, you will be numbered among a group which at present is all too small, and too seldom heard in courts of law and coroners' offices. Some day there will come a time when photographs and photostats can be produced to show the history of every driver who has figured in one or more accidents: the circumstances, the victims, even the settlements!

"When we get to the point where dollars and cents offered by insurance companies won't mask out the tragedy of the traffic lanes, and adequate commissions have been set up to advise our courts toward really ending this slaughter, I hope that 'shooting for the coroner' will be a camera campaign worthy of its own hallowed niche in a newer and better Temple of Justice."—

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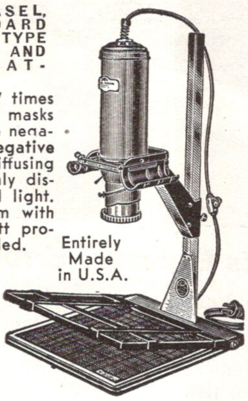

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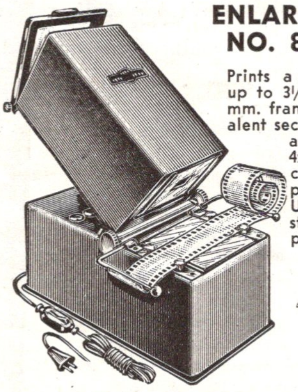

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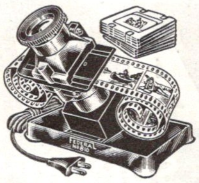

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Television

(Continued from page 13)

paratus which directs a stream of electrons against the plate. This instrument is called an "electron gun." As the stream of electrons moves horizontally across the plate it strikes the light and dark areas of the picture. Electrically, the darker parts of the picture give off more current than the lighter ones. It is this rapidly varying current that recreates the picture at the receiver.

In order to get a full picture, the stream moves across a line horizontally, and then drops to the next line. It does this at an almost incredible speed. Now if the receiving tube, called a kinescope, will direct a stream of electrons against a zinc-sulphide screen in the end and register the same darks and lights as does the iconoscope, a full picture will result. Were the lines to be taken consecutively, there would be a flicker, so the picture is "scanned" by a system known as "interlacing." This is done by scanning every other line once and repeating with the lines previously missed. Thus lines 1, 3, 5, 7, 9, etc., are scanned first and then lines 2, 4, 6, 8, etc., next. Since there are 441 lines to a modern television picture, the scanning rate is 220½ lines per each time, or "field" and the number of "fields" per "frame" is two. As a new picture is started every 1/60 of a second there are 60 "fields" or 30 frames per second. To explain fully the type of television that we have today, it is necessary to say that there are 441 lines, per picture, regardless of its size, 30 frames per second, 2-to-1 interlaced. All this seems complicated to the newcomer, but if he wants to enter this interesting and lucrative field, these terms must become commonplace to him.

The nearest approach to an analogy of the iconoscope is the figure of the boy watering the lawn. He waters it in sequence, left to right, in even lines. Then he returns and waters every line that he missed the first time. The receiving tube does the same thing except that the impact of the electrons against the screen of the cathode-ray tube (called "kinescope") makes the screen luminous at the point of impact. The heavier the current, the heavier the impact and the greater the luminosity. Hence, the tones of the transmitted picture will coincide with those transmitted *if* the receiving sequence is the same.

The sequence is kept in step by a complicated system of "pulses" which are sent along with the picture from the telecaster. The telecameraman must be familiar with these too, but they cannot be here covered at this time.

In conclusion, it might be wise for the expert cameraman who desires to enter this new profession to obtain the maximum of schooling in radio and electronics. Certainly the field is too highly technical to hope to "pick it up" practically, or in a hap-hazard manner.

There will be many who will be called from the rank of cameramen as telecameramen. Will you be one of them?—▶

NEW BOOKS

THE EIGHTH ART: A LIFE OF COLOR PHOTOGRAPHY, by Victor Keppler. Published by William Morrow & Co., Inc. Cloth bound (acid-proof), 12½ x 9½, 270 pages, illustrated, 31 full pages in full color; 1st Edition autographed, $10.00; numbered copy (1st 1,000) $12.50.

The first 1,000 copies of this complete book on color photography contain an actual color photographic print. This volume covers the subject in all its phases from its earliest history to its most modern techniques and applications. The author, a noted worker in color, reveals for the first time a number of processes as well as his own technique in making color prints. The text includes all formulas and explanatory material — everything necessary to give the reader the most complete, practical, and up-to-date information on color photography.

$50 A WEEK WITH CAR AND CAMERA, by Paul Glenn Holt and H. Rossiter Snyder. Booklet No. 12 in "Profitable Photography" Series. Published by Fomo Publishing Co., Canton, Ohio. Paper bound, 8¾x6, 44 pages, 50c.

Anyone with a camera and love of the out-of-doors will find special interest in this true story of a young man who started a business of his own with only an amateur camera as equipment.

PHOTOGRAPHY — ITS PRINCIPLES AND PRACTICE, Third Edition, by C. B. Neblette, F.R.P.S. Published by D. Van Nostrand Co., Inc., New York. Cloth bound, 9x6, 590 pages, illustrated, $6.50.

Photographers who are acquainted with earlier editions will find this is virtually a new book, the author having completely revised his earlier work to bring it up to date. The volume contains complete data on photography. It gives facts and figures, diagrams and charts, and methods and formulas. Carefully chosen photographs clarify the author's directions for obtaining best results in all practical aspects of everyday photography. The serious worker will want to add this book to his library as an authoritative reference and handbook.

THE PHOTOGRAPHY OF COLORED OBJECTS. Fourteenth Edition. Published by Eastman Kodak Co. Cloth bound, 8½x5¾, 124 pages, illustrated, $1.00.

A revised edition of the well-known book which explains the theory underlying the photography of colored objects and the application of that theory to those branches of practice which are of the most frequent occurrence.

THE FUNDAMENTALS OF PHOTOGRAPHY, Eighth Edition, by C. E. K. Mees, D.Sc. Published by Eastman Kodak Co. Cloth bound, 8½x5¾, 126 pages, illustrated, $1.00.

This popular book, now in its eighth edition, was written with the object of providing an elementary account of the theoretical foundations of photography, in language which can be followed by anyone without specialized scientific training.

Burroughs Wellcome Photographic Exposure Calculator for 1939. Linen bound, pocket size, 236 pages, 75c.

Handbook and diary with built-in exposure guide, and including valuable processing data, film factors, etc.

Modern Enlarging Technique, by Hanns Neumann. Distributed by Burleigh Brooks, Inc., New York. Paper bound, 8¼x5¾, 54 pages, illustrated, 60c.

Handbook for use with the Bee Bee enlarger. A practical and helpful book which also serves as a general treatise on enlarging.

Any one of the books listed here can be obtained either from your local camera dealer or POPULAR PHOTOGRAPHY'S Book Dept.

More New Weston Ratings

In addition to the new ratings published last month (page 97) the following film speed values have been determined:

	Daylight	Tungsten
E. K. Super-XX Roll Film	64	20
E. K. Super Ortho Press Cut Film	100	50
Kodachrome Cut Film Type B	..	6
Outdoor Type	5	..
Eastman Polychrome Plate	24	12
Wratten Tri-Color Plate	50	20

These values become official on publication of the next regular issue of the Weston film speed chart.

Questions and Answers

(Continued from page 64)

the lens aimed toward some brightly lighted distant object, place the groundglass in back of the lens and start moving it away from the lens. When the image thrown by the lens upon the groundglass becomes sharp you have arrived at the lens' focal distance. To ascertain the focal length of the lens, measure the distance from that point to the approximate center of the lens. In order to be able to see the image clearly it is best to work from the window of a room where there will be no bright light behind the groundglass.

R. W. M., Monticello, Ark. What circle of confusion should I use in calculating depth of focus tables for a 50 mm lens which I use on my 35 mm camera?

Answer: Most good 50 mm lenses are calculated to give a maximum circle of confusion of 1/800 inch even at full aperture. In actual use you will find that as you stop down your lens the circle of confusion becomes slightly smaller until the very small stops are reached; then it tends to expand again. A lens having the 1/800-inch circle of confusion should, when focused sharply, give you negatives which will enlarge satisfactorily to 8 or 10 diameters, if the negative is processed with care. Therefore in your calculations use at least 1/500 inch.

H. W. B., Omaha, Neb. Some color pictures are strong and in what might be termed "low key." Others are delicate, having a transparent cast, similar to high key in black-and-white. What determines this difference? Is it in the original subject; or could it come from a difference in the type of Carbro pigment paper used?

Answer: While the lighting of the original subject is an important factor, local control of separation negatives may play a considerable part in the final general tone of a Carbro print. Using one set of negatives an advanced worker can turn out two Carbro prints of the same subject which will show a great difference in tone.

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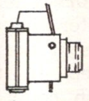

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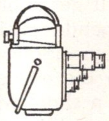

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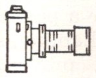

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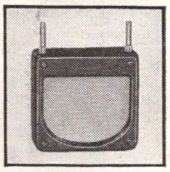

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Color for the Amateur

(Continued from page 11)

any table could. For tables are usually more of a hindrance than a help. They are accurate only for the person who is giving them. He has worked them out under his own conditions. If your studio ceiling is even one foot higher than mine, every exposure on my table is inaccurate for you. The best table for you is one that you yourself have worked out. But an exposure meter is different. It is designed to measure the intensity of light on and around the subject you are photographing.

In taking photographs in color from sunrise to sunset, you will soon realize that the intensity of your color depends on the angle of the light to the earth. You will notice that as it grows later in the day and sunset approaches, the rays of light from the sun begin to change color. They take on a yellowish-orange cast and give a lovely warm effect. The light from the sun at this time of the day can be used, but be sure beforehand that it fits exactly what you have in mind.

You will also find that objects, people, or landscapes when illuminated by diffused light from the sky or reflected light from grass, snow, or water give you the same color as the source of the reflection, but in a lighter degree. In other words, you will get a bluish color reflected on your subject from the sky or snow, and a greenish color from grass or water. Very often you will get a bluish cast from water. It depends entirely upon where you are photographing. All this is definitely visible to the eye after you have worked at it for a short while.

Personal taste will aways dictate the color or contrast of light for a particular subject. Choice in back lighting, side lighting, or front lighting proves the taste and ability of the photographer. Strong highlighting, either by sun or by artificial light, is used to enhance the beauty of the object or person you are taking.

You know that in black and white photography when you are confronted by a subject that is flat and uninteresting, you can obtain a lovely effect by cross lighting or side lighting. This gives you a shadow area to break up the flat area. This can also be done in color, especially if the colors are all the same. For example, if you have a bed of flowers all in one shade and closely packed, it is wise to cross light, side light, or back light in order to obtain an effect and break up the monotony of the single color. All you need do is move your camera around the flower bed until the light of the sun gives you the desired effect.

It is important to remember that you must consider not only the amount of light on the subject, but also the amount of light reflected by the subject. There are light, dark, and normal subjects. A dark blue dress, a dark brown pony, heavy green leaves, or deep blue water—any of these subjects reflect very little light and need a longer exposure. Light subjects, such as snow, white breakers at the oceanside, pale blue shades, pastel shades in clothes, reflect more light and should be given less exposure. The normal subject is a combination of both dark and light shades.

In photographing a highly reflecting surface the lens must be stopped down one stop smaller than the normal requirement. For a dark subject the lens must be opened one stop above normal.

A trouble with most amateur photographers is a lack of sufficient forethought about their pictures. This can be attributed to the carelessness of the modern workman. Making pictures today has become too easy. When only an 8x10 camera was available, and a lot of work and expense was involved in making a picture, one could not afford to be careless because of the money, time, and effort that had to be expended.

Lenses and emulsions are faster today and corrected to a degree unthought of before. Miniature cameras of perfect precision tend to make the amateur forget the expense. The price of materials for a miniature camera is very low compared to the price before the advancement of photography. But all the modern steps that make for better films and faster lenses, the costly laboratories maintained by manufacturers to delve into ways of further improving photography—these should have an entirely different effect. Instead of shooting more pictures because film is cheap, one should shoot better pictures than ever before. It seems as if amateurs have degenerated to the point where they are merely shooting picture after picture and using rolls and rolls of film. Why not spend time in organization, and shoot only a few exposures—*but each one better than the last?*

The equipment for amateur work today is almost perfect. Use it to get the best results of which it is capable. No matter how perfect your camera is, how many gadgets it has, that camera produces results equal only to the directing intelligence of the person using it. Even the simplest box or pinhole camera in the right hands can produce prints worthy of exhibition.

Anybody who shoots hundreds and hundreds of negatives of a single subject may get an "accident" resulting in a lovely photograph. This does not necessarily make him a good photographer. A good photographer makes his exposure only after he is absolutely certain that what he sees—subject matter, lighting, composition, and color balance—is exactly what he wants. The photographer who knows what he is going to take, knows exactly what his result will be when he takes it.

Color photography is the only way the average person can express himself in terms of art. Art teachers and study abroad are unnecessary. If you learn the essentials, you can evolve your own technique. The field is limitless. Explore it!

There are two kinds of color film available that are ideal for amateurs. Both can be used in the popular miniature cameras. They are Dufaycolor and Kodachrome. Both are now available also for larger size cameras.

Due to its complicated method, Kodachrome must be sent to Rochester for processing. But Dufaycolor can be processed in your own darkroom. These films come in miniature size as well as in the standard roll size and film pack. Ninety-five per cent of the cameras made are suitable for Dufay; only cameras with a small fixed aperture cannot be used. Any of your dealers can supply you with Dufay or Kodachrome in the correct size for your camera.

Before going into a study of the technique of color photography, I should like to give you my ideas about taking color photographs with Dufaycolor or Kodachrome. I do not expect you to turn out masterpieces in color with either of these methods the minute you start. A photograph will reflect only your thought, care, and knowledge. You will need time, patience, and study.

I will assume that you know how to take a good black-and-white photograph. Very well—just forget it. For the taking of color is as remote from black and white as night from day. For years you have been translating color into shades of white and black. To obtain a contrast in black and white you used dark clothes against white clothes. The actual color in the photograph needed no color harmony or balance whatsoever. You are now faced with an entirely different problem. Where you have heretofore obtained roundness by light, it must now be obtained by color; depth, too, must be obtained through color. To all of you who are interested in color and have not yet tried it and to you who have tried it, my advice is to ignore everything you have ever learned from black-and-white.

Many of you have asked me, "How can I learn about composition and color?" Unfortunately, there are no books or schools on the subject that I can recommend. But there is a way! A much pleasanter method than reading or attending lectures. Visit the art museums. Study the paintings there with your needs in mind. Try to detect the means by which each picture was lighted. Study the composition of the colors. Not the composition and the colors—the two must be treated together. They are indivisible. Any composition conceived in black and white is so changed by the addition of color that the balance cannot be true. Composition must be studied in terms of color. Color enlarges or contracts masses. It adds emphasis or it subdues. Do not take my word for any of these statements. Look at the work of the great modern painters. Learn how they use color as an integral part of their compositions. They conceive in color—they do not add it as an afterthought.

You can learn lighting in the same way. The greatest master of them all was Rembrandt. His use of light and dark contrast has never been equaled.

(*Please turn to the next page*)

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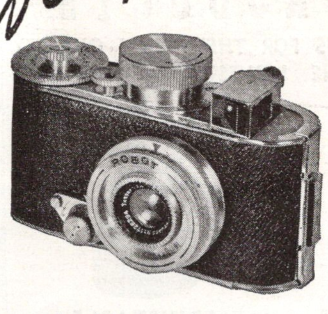

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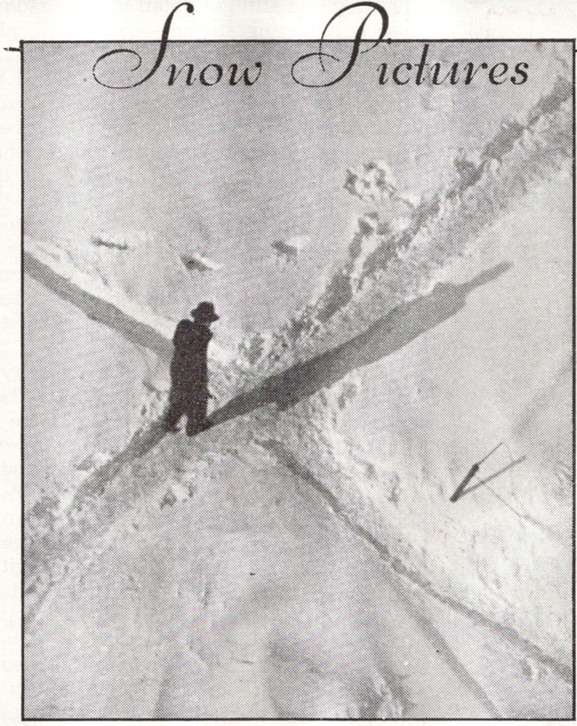

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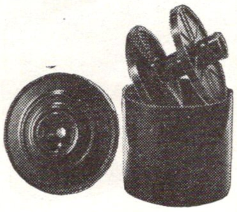

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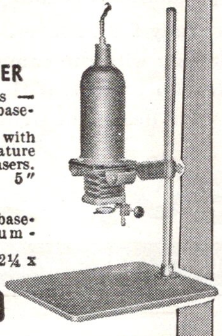

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I am not asking you to copy the moderns, Rembrandt, or anyone else. Once the composition in color and the lighting you have learned from them are part of your equipment, you can forget all about them. You will then be able to express yourself in terms of your own medium.

Here is an example of how a color photograph is set up. I wish you could be with me so that I could show you what I mean. Since you cannot, I will try to explain it as simply as I can. The principles are exactly the same when more than one person, set, and scene are concerned.

You have a subject sitting out in the open. The rays of light are coming over the right shoulder of the subject. The sunlight is hitting the right side of the subject and lighting only half of the face. The left side of the face is in total darkness except for whatever natural reflected light it is getting. The strength of the light side of that face is such that you cannot expose for the shadow and obtain any tone whatsoever in the highlight. You may say, "Well, why not let the sun hit straight into the person's face?" You can, but why photograph a subject with as flat lighting as that!

Let us assume that this lighting, half light and half dark, is exactly what you are trying to portray. To keep this lighting and still get detail in the shadow, use a reflecting surface—cardboard, pillowcase, any white surface. The extreme contrast you see should be shortened by means of those reflecting surfaces until the shadow is ten or fifteen per cent lighter than you want in the finished print. The reason for opening up the shadow will be clear if you think of the process. Due to the use of three colors, the image takes on an additional body of approximately ten to fifteen per cent. This compensates for the ten to fifteen per cent by which you lightened the shadow in taking the picture.

So far I have mentioned only one type of lighting. There are hundreds. Their use depends entirely upon the taste of the individual. Lighting—indoors and out—presents the same problem for Kodachrome and for Dufaycolor. Light must at all times be so balanced that contrast is not too extreme. The ratio between shadow and highlight must remain within 25 per cent. The exact percentage within this limit depends entirely upon the effect you are seeking.

When the shadow portion of the subject suits you perfectly, open it up at least 15 per cent. This is merely a general rule. I do not mean to say if you want a black half of a face, or half a photograph with no detail whatsoever in it, you cannot or should not take just that. I do say that if the shadow portion of the subject is partially visible to the naked eye, it will be 15 per cent darker in the print than you see it. This additional 15 per cent usually results in a dead black shadow.

As far as lighting is concerned, indoor or outdoor lighting may be so maneuvered as to provide general lighting directly away from the sun, or evenly reflected light with the sun directly in back of the subject. When I speak of evenly reflected light, I mean a complete reflection into the shadow portion of the face and body from a reflecting surface such as a white wall, a white bed-sheet, or a white cardboard. Such reflected light brings up the shadow of the face to a terrifically high key. If you take a white cardboard and let the sun hit at such an angle as to reflect the sun from off its surface onto the subject, you will find that the shadow will open up to practically a highlight. It will not be so strong as the direct sun rays, but it will give you soft general illumination.

If I seem to be stressing light too much, it is only because I realize its importance in color photography. Before you start to use color, you must understand and get the feel of a correct balance between highlight and shadow.

The loveliest of all colors in color photography is white. White contains all the spectral colors in light. If you are taking a photograph out of doors, you will find that the light of the sun on white will give you a lovely warm highlight. The reflected light in the white will give you shadow, its color depending on that of the reflecting surface near the subject. Green grass reflects green light into the shadow side of your white. The grass gives a lovely color shadow. The reflection of clean snow into the shadow side of your photograph gives a very pleasing cold blue. The more you study color, the easier you will be able to distinguish almost invisible reflected colors. There are times, however, when the reflective colors cannot be seen by the naked eye, yet they show up in the color photograph. Do not worry about this, because in all cases these invisible reflective colors are pleasing, as they are complementary to the highlight colors.

With white it is comparatively easy to see reflective colors. These same reflective colors are visible if you use garments of other colors; but an untrained eye finds it harder to distinguish them against a colored background.

All highlights should be toward the warm side of the color spectrum. The side ranging from yellow to orange, and orange to red. Conversely, all shadows should be on the cold side, ranging from blue-violet to green. This provides a basis for judging color balance. The shadows should be in the colors that are complementary to the highlights. There are exceptions to this rule but they are rare. Flout this precept only when an extreme result is required, such as a very "hot"-looking picture. When I speak of a "hot" picture, I mean one where the highlight is very powerful, and the shadow, instead of being on the cool side, is purposely put in the same spectral range as the highlight by the use of a colored reflector. A warm highlight and a warm shadow give an interesting, intense effect. Not one picture in a hundred is improved by creating such an effect artificially.

Since the spectrum is divided into so-called cold and warm sections, I would suggest that in your first color picture you limit yourself to colors in the same part of the spectrum, such as yellow to red, light green to dark green, or light blue to dark blue. Any shade of color within that range produces harmony. Sometimes the use of these colors results in a striking representation of a subject.

When you have thoroughly explored the possibilities in this limited color range, experiment by combining red and green, blue and yellow, blue and red, green and orange, or any other combination you wish to try. Bear in mind at all times the wave length of each color. The color with the longest wave length is the first color visible. If your subject is wearing a light-blue or a light-green garment, and one corner of the picture has a brilliant red awning breaking into it, the red will distract attention from your subject because it has a longer vibration than any of the other colors within the photographic area. Study a chart of colors and the representative wave lengths of each, and use that knowledge in combining colors for your photographs.

When the color scheme is decided and the lighting set, the problem of composition then becomes the concern of the photographer—all this before he can actually shoot the picture. As was the case with color, so it is with composition in color photography—it is entirely different from what you have known it to be in black and white. In black and white, light areas in contrast to dark areas make an interesting pattern. In color, highlights and shadows assume a different aspect. I do not say that there is no highlight and no shadow in color. What I say is that the highlight is color, the shadow is color and for that reason it cannot be treated as a highlight or a shadow so far as composition is concerned.

Composing a color photograph is a thing you must learn and feel for yourself. It is impossible to give definite rules as to how much red, how much yellow, or how much blue there must be in a given area. You must acquire a feeling for composition that will make your pictures definitely your own.

To me, the most important rule of composition is that there should be no two objects fighting for attention in one area. If a head is to be the focal point of interest, then all else in that photographic area must be subdued to it both by lighting and by color. If the head, body, and action are all important, then the color chosen for the subject should have the longest possible vibration. If the color vibration falls short of the longest vibration, all the other colors in the picture must have a vibration shorter than the featured color.

Lighting can be used in color composition to subdue long-vibration colors. By keeping the light from a color you shorten its vibration. If a brilliant red is thrown into shadow, it will be brought down to a considerably lower key.

There is nothing further I can tell you about light and color; your own experiments will teach you more than any amount of reading.—

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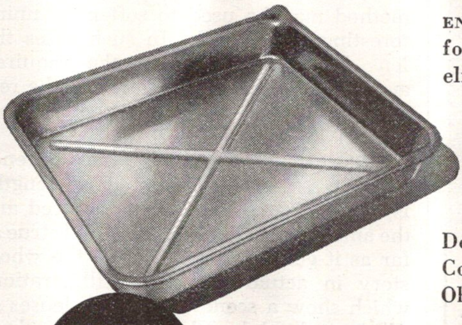

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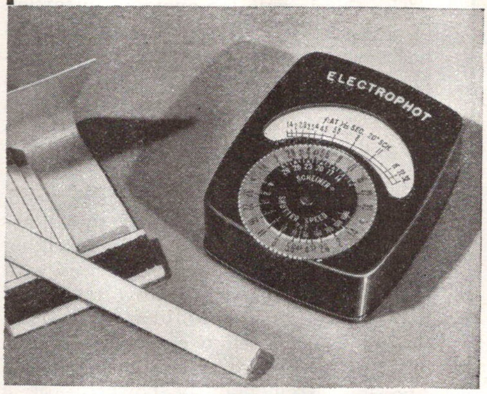

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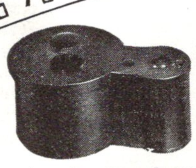

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Lenses for the Miniature Camera

(*Continued from page* 33)

pictures and when there is close foreground in the picture. For shots of scenes where there is nothing of importance closer than 60 feet, little attention need be given to the depth of field with the shorter lenses.

The shallow field may be used, in many cases, to aid composition and emphasis. In portraiture it is often advisable to focus upon the subject and throw the background out of focus to make it less obtrusive. In distant scenes the same method may be used to soften an uninteresting foreground. In such cases the lens is opened up until the required amount of softening is secured in the rest of the picture while keeping the principal subject in sharp focus.

It has been said above that the difference between lenses of different focal lengths is in the size of the image produced and the amount of field covered. This is true as far as it goes but does not tell the whole story in actual operation. Illustrations which show a scene taken with lenses of different focal lengths often show them taken from the *same* position. If all the pictures were taken from the position at which one would take a picture with the lens of longest focal length, there would be little difference in them except in size. But pictures taken with shorter focal length lenses are usually taken from a much closer viewpoint than the same picture would be taken with a longer lens. The effect of taking them closer with the shorter lens is in making the relationship of objects appear different in the print than it appears to the eye. Nearby objects are made to appear larger and distant objects are made to seem smaller. A street photographed by a short lens looks unduly wide and long; a small pond is made to appear like a lake; and (approaching the ridiculous) a nose in a portrait is made to appear too large for the face.

The simple rule for avoiding distortion of this sort is to place the camera well back when using a short focus lens. Move it back to about the same position that would be used with a longer lens, take a smaller image, and then enlarge it. Enlarging gives larger objects in the picture without distorting them.

Distortion, if thoroughly understood, may be used to gain emphasis, to call attention to the subject or to gain a striking effect. Such distortion must be used with care and knowledge of what the effect will be or the picture will look ridiculous. Short focus distortion can be used very effectively to make an ordinary locomotive look tremendously powerful or a small steamer look like a liner but be careful that the tremendous looking engine hasn't the details of a switch engine or that the supposed liner doesn't look just like a big tub. In such cases technical knowledge of the details of the subject is more important than camera technique.

Falsification by distortion can also be carried out in the other direction by the use of a long focus telephoto lens, though there is less danger that it will occur unintentionally. The method is to take the camera to an excessive distance from the subject to make the subject appear smaller compared to a distant background. A favorite trick is to take pictures of cities in such a manner that the distant mountains appear to be towering above the metropolis. The method is quite simple. The camera is taken to a spot about two or more miles from the city, a telephoto lens is used, and the peak, sixty miles away, appears very close.

It is difficult to give rules on choosing lenses to avoid distortion beyond the fact that, unless used with care, short focus lenses produce closeup distortion and telephoto lenses produce distant distortion. Much depends upon the position from which the picture is taken, and it is best to examine the image carefully in the finder.

There are four types of lenses that interest the miniature camera user; the general purpose anastigmat, the telephoto, the wide-angle lens, and the portrait lens. There are not many portrait lenses made for the miniature camera so they are seldom met with. Their distinguishing characteristics are long focal length, high speed, and usually only partial correction of aberrations. They are purposely made to give a soft image and not critical sharpness. Well stopped down they are quite sharp but not very fast.

The general purpose anastigmat lens is the one usually chosen when one lens is to be used for different purposes, in other words, when the budget is limited. The usual choice for cameras which use 35 mm film is a lens of about 50 mm focal length with a speed of f 3.5 to f 2. It is an excellent lens for most work but often will be found a bit narrow in its field of view. The lenses usually furnished as standard equipment on the reflex and other types of 2″ x 2″ cameras are of relatively shorter focal length and cover more area.

Wide-angle and telephoto lenses are self explanatory. Each has certain limitations. The wide-angle lens is apt to give serious distortion, and if used wide open some makes cause the close foreground to appear bent out of shape. For this reason they are seldom made with greater speed than f 3.5 and should never be used without stopping down to a small aperture unless the lighting conditions are very bad.

The telephoto lens is a lens made strictly for special purposes. It is usually expensive and heavy to lug around. In addition this lens demands great care in use if sharp pictures are to be secured. Due to the long focal length the rays of light reach the film in a very narrow angle and focusing must be done very carefully. The slightest inaccuracy will result in a fuzzy image. Any small movement of the camera, even during a short exposure, will cause a blurred image so that with very long focus telephotos every shot must be made with a tripod. Taking long distant shots is by no means easy, even with the best of equipment.

While on the subject of types of lenses it might be well to consider the extremely fast lens, that is a lens faster than *f* 3. For taking high speed pictures or working under very bad lighting conditions, a fast lens will do remarkable work. For one who has not had a great deal of experience with a camera or who has no great need for a fast lens it will be a decided disadvantage. The very fast lens is so powerful that it is capable of great errors as well as unusual performance. Forgetting to change the focus or stop setting, or a small inaccuracy in either of these will result in negatives which are worthless. With an *f* 4.5 (or better yet an *f* 7 lens) the chances are that most inaccuracies in setting will fall within the latitude of the film and the depth of focus of the lens.

The lens for color work must be of high quality and should be a fast one. It is particularly essential that the lens be fully corrected for all colors, that the red and blue rays focus equally sharply in the same plane. Some of the less expensive lenses, and particularly the older ones, are not so corrected and will give a color fringe around objects. The lens should be as fast as possible for action shots because color film is only about 1/3 as fast as the usual black-and-white film. What this means is that an *f* 2 lens is needed to make color pictures under the same conditions that could be met by an *f* 3.5 for black-and-white.

Here is a very helpful table to assist in lens choice according to purpose of use. This table applies only to cameras using 35 mm film and where lenses are interchangeable.

Focal Length	Type	Purpose
2.8 cm	Wide Angle	Interiors of rooms, large machinery and buildings in close quarters. Closeup distortion effects.
3.5 cm	Moderate Wide Angle	Architecture, interiors, general work in narrow city streets.
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7.3 cm (f 1.9)	Long Focus	Night candid shots, sports at moderate distance, portraits.
9.0 cm	Long Focus	Sports, aerial photography, moderate distance shots.
9.0 cm	Portrait	Portraits and soft focus pictorial work.
13.5 cm	Telephoto	Distant shots of sports, nature photography, ships at sea. Tripod highly advisable.
15.0 cm and longer	Telephoto	Extreme distant shots. Must be used with a tripod.

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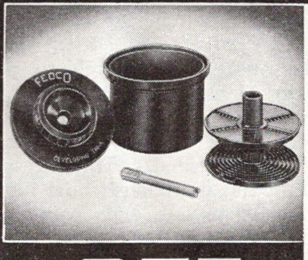

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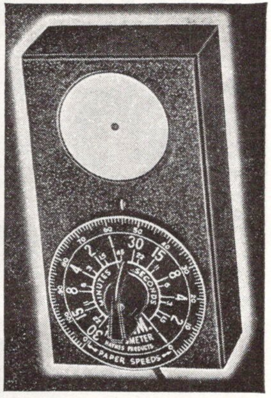

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Karl Freund

(*Continued from page* 51)

sensitive film. For instance, if I wanted to take a street scene in the early morning in the shadows of the slums, the poor lighting conditions made it absolutely necessary to use extremely sensitive stock.

"Of course if people knew that I was taking their pictures, all realism would be lost. I had to get *candid* shots. A big truck, enclosed in the back, accommodated my equipment. I cut slots in the sides just large enough to permit poking my lens through. Then, very innocently, I would stand around until I noticed something unusual, or saw a type that I needed. Then I would clamber in the truck and shoot my picture without anyone ever being aware of what I was doing.

"Another trick that was very effective was a box I rigged up. It looked like a suitcase, and it also had a slot to permit exit of the lens. I went all over Berlin with my camera in that box and no one ever suspected. Like this: say I wanted an unposed picture of people eating. I would go into a restaurant, put the box on the table beside me, and shoot to my heart's content.

"Of course my hypersensitization process was very crude, and would last only a few hours, so as soon as I made a scene or two I'd rush home to my laboratory and develop. The film would fog, too, if I left it in the camera too long. I lost a lot of marvelous shots that way. Then at night I would process more film and be all ready for the morning's shooting. It might be interesting to add that I was able to take night shots, too, with film so treated.

"It took me two years to finish the picture. I started it in late spring. By the time I had gotten under way, it was winter with snow and ice. Since the picture was supposed to be only one day's cross-section, I had to wait until the next summer to finish. During the winter months I cut and edited and arranged for the music. Of course there was no dialogue in the picture at all. Ah . . . that *was* a picture. I'd like to do it all over again."

Following *Berlin, A Symphony Of A City*, Herr Freund was much in demand by the studios. He made a number of pictures which brought him immediate recognition, two of which were *The Last Laugh*, and *Variety*. As a result of those pictures he was brought to the United States in 1928 as first cameraman for Universal studios where he photographed such pictures as *Back Street, The Mummy, Frankenstein, Dracula, Seed*, and others.

His talents were not confined strictly to photography, for he also worked as a director, making such hits as *Moonlight And Pretzels, I Give My Love*, and *Gift Of Gab*.

Freund's Hollywood record has it, in part, that he is one of the foremost exponents of mystery stories that depend on fantastic photography for their success. Another of his pictures, however, which has made him famous to theatergoers the world over, is vastly different from mystery yarns.

Perhaps it would be a sufficient character sketch of Karl Freund to mention only one picture in connection with his name. That picture is *The Good Earth!* A movie that will go down in history as one of the classics of all time, and one which brought trophies from the Academy of Motion Pictures Arts and Science.

"I was very happy when I knew that I was to make that one," he said. "The producer called me into his office after I had read the script. He asked me what I thought about it, and what my approach would be."

"I told him that the picture could be made in two ways. First, I could make it a picture of beautiful composition. I could put a light here, a tree here"—he jabbed at the cloth—"and a bit of action here. That would be nothing but a series of lovely scenes.

"But, if I had my own way, I'd shoot it through a *keyhole*. By that I meant that I would strive for realism above all things. I'd make it stark, alive, and try to show a real cross-section of Chinese life. By *keyhole* I meant that my portrayal would be made just as if I were inside a house peeking through the door at people who were unaware that they were under observation.

"The producer thought for a moment and then he said, 'You know more about photography than I'll ever know. If that's the way you see it, go ahead. The assignment is yours.' His decision was typical of his genius and one of the qualities that made him so great. The producer was Irving Thalberg.

"Well, I shot *The Good Earth* through a keyhole. Here is an example. Do you remember the scene where the character played by Paul Muni arose from bed, fed his ox, peered out the door and fetched a bucket of water? Well, I used twelve different camera set-ups on that scene. I didn't want the audience to be aware of a camera at all. By changing camera action for that small sequence I tried to make the audience feel as if they were actually moving about in those two small rooms and ox stall. And that, incidentally, is my theory of great photography. If the cameraman can succeed in portraying a scene or bit of action so realistically that his audience is completely unaware that it is merely a picture, then he has succeeded."

"Have you ever been in China?" I asked. "You showed such a keen insight into the lives and customs of the Chinese that I thought, when I saw the picture, that you must have been there."

"I have never been in China," he replied. "But in preparation for that picture I read hundreds of books and studied everything I could find pertaining to Chinese life. The studio has a tremendous reference library, and I got much of my information there.

"Vicki Baum, who, as you know, has travelled all over the world, was tremendously helpful in giving me my conception of the story and players. She

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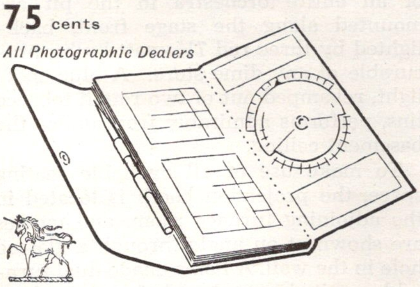

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was sort of off-the-record technical adviser."

"If you don't mind my mentioning it," I ventured, "you said that in your *keyhole* process you forgot composition and tried for realism. How is it that *The Good Earth* has some of the most beautiful scenes ever filmed?"

"Ah, but composing a picture is the first thing a good cameraman does regardless of the effect for which he strives. It's second nature for a cinematographer to compose every scene he shoots without being aware that he is composing."

"Could you give me some tips for the amateur who is interested in cinematography?"

"That's an impossible task," he smiled, "but I might make a few generalizations. One in particular which is a penchant of mine.

"For many years composers of great music were bound by the conventions of traditional orchestration. Everything they composed adhered strictly to the regulations of the masters before them. Then came a composer named Stravinski. He proceded to defy and break all the rules of music. And as a result his music, while different from that of his predecessors, will live forever.

"The same idea applies to photographers. To still photographers as well as devotées of the movie camera. Forget rules. Defy convention. Shoot just as you feel. Follow your emotions, not a guide book. If your work doesn't please you at first, at least you won't be guilty of copying. Originality is the primary motif of the truly great photographer.

"Do you ever take stills?" I asked, innocently.

His laughter boomed over the room. "You just ask anyone who knows me. I'm never without my 35mm. still camera."

"Then you think that so-called candid photography is *real* photography?"

"It is the only type of photography that is really art. Why? Because with it one is able to portray *life*. These big negatives, now, where people smirk and grimace and pose. Dodging and pasting and damn tricks. Bah! That's not photography. But a very fast lens. Shooting life. Realism. Ah, that is photography in its purest form." He looked at his watch. "I go back to work now. Sorry to rush off, but this light, it might go any time."

This, then, is a picture of one of the industry's greatest craftsmen. Five-feet, eight-inches tall, and weighing 265 pounds, he is one of Hollywood's table-tennis champions. He is an accomplished violinist and a collector of rare books.

All else is superfluous, however, when it is said that he is the man who made *The Good Earth*.—▶

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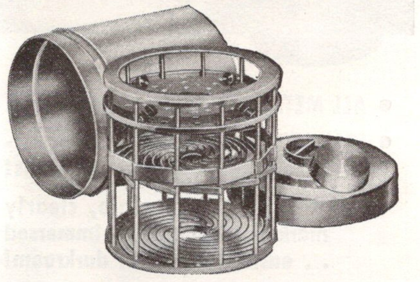

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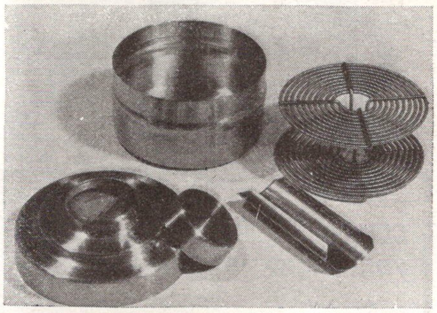

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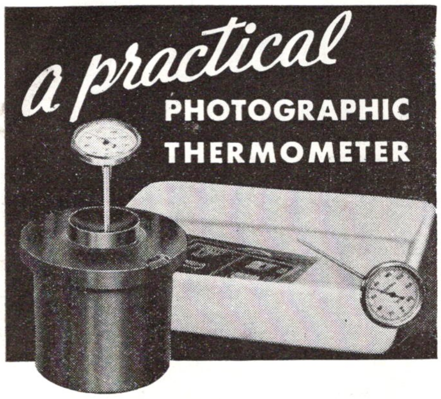

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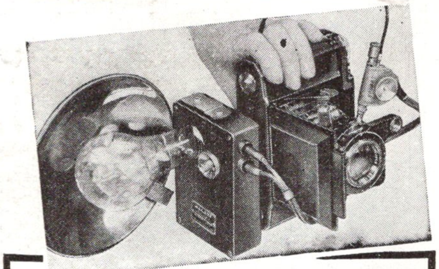

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Home Movie Theaters

(Continued from page 53)

tints, these six-volt lamps (Christmas tree bulbs are also good) were controlled from the projection booth for dim or bright effects. For special effects, tiny spotlights, fashioned from discarded dry cell flashlight reflectors, emphasize special sets.

To protect stage and screen and give the layout a professional appearance, an oilcloth curtain, modernistically painted, is hand-controlled from the booth. A fabric curtain, however, will serve the purpose just as well. The upper edge of the material is sewed to loop rollers which move along a horizontal rod well above the stage front. An endless cord extends from stage to booth along the ceiling, and, by pulling one direction or the other, the curtains are quickly opened or closed. If desired, this hand-operation could easily be motor-driven.

Packing the projector, sound equipment, recordings, reels and other miscellany into a 3 x 8 ft. projection booth presented another problem. But this was quickly solved by partitioning the wall space into handy shelves, and utilizing the upper shelf in each case for supporting projector and turntables.

To give necessary altitude without resorting to tilting seats, a false floor 5 inches high was erected in the booth. A tiny hole for the projector lens was cut 5 ft. above the floor, while a larger peep hole for the operator was laid out at eye level.

In our particular case, we found that 12 regulation theater seats could be set up conveniently in three rows of four chairs each. This left an 18″ aisle along the one side, sufficiently wide to handle even a sell-out.

Obtained at a substantial discount from a dealer in used theatrical equipment, the chairs were scraped, refinished, and screwed to 1″ wooden bases, 4″ wide and 7 ft. long. Each row of chairs is 18″ apart. Three ¾″ strips of iron are mounted equidistant and at right angles to the wooden bases to prevent the chairs from tipping back. Since a rug covers the cement floor, this eliminates the need for securing the chairs to the floor itself.

In actual projection, everything is controlled from the booth—auditorium lights, footlights, spotlights, curtain, and turntable sound effects. Two turntables are used, and the sound is reproduced through a small portable radio set mounted behind a framed screen beneath the stage front.

In most every city in the country there are amateurs who have gone to no small pains and expense to produce home-made palaces for public screenings. And in every instance, ingenuity plays an important part, for no two theaters are exactly alike.

For instance, Carroll Davidson, retiring officer of the Minneapolis Ciné Club and an active movie maker, has constructed a portable, sound-equipped theater in the basement of his home. Instead of the usual wooden walls, red plush drapes line the walls and stage front. Colored ceiling and curtain spotlights furnish a realistic touch. A soundproof laundry room with a windowed door serves as a convenient projection booth. And when wash day comes around, the Davidson theater can be completely dismantled and converted into a clothes drying room in less than 15 minutes. When the feminine members of the family are done with their domestic duties, the plush drapes are re-hung, and the show goes on.

Dan Billman, Jr., another resourceful Minneapolis movie maker, has found that a sun room adjoining the living room provided an excellent booth for his home showings. Projector, turntables, microphone, and amplifier are conveniently placed on a card table and pictures are thrown through the half-closed door to a screen mounted at the far end of the living room. Thus, projection and other noises are reduced to a minimum.

Ray Rieschl, member of the program committee of the Minneapolis Ciné Club and recent inventor of a trick gadget which may revolutionize 8 mm filming, has utilized his ability as a cartoonist and showcard writer in the design of his theater.

The motif here is strictly nautical. Stepping into the Rieschl theater is like walking out on the deck of an ocean liner. Basement walls and ceiling are painted battleship gray, with portholes, ventilators, and even a ship's log as a guest book. The basement windows are bedecked with navy blue curtains on which white pilot wheels and anchors have been sewed. Along one entire expanse of wall a ship railing and ocean view have been hand-painted in oil, with a giant liner cruising off in the distance. Laid out on the floor of the theater is a giant compass pointing true north. Although the entire theater area is only 12 x 20 ft., the realistic setting gives the impression of much greater breadth.

Mr. Rieschl, who has been movie-making less than two years, built his portable stage of wallboard in an afternoon. It is 5 ft. high and 5 ft. wide, and the stage is only 18″ deep. The 26″ x 34″ beaded screen is mounted against a dark cloth background, and light blue stage curtains are opened and closed by strings operated from the booth. Cut-out silhouettes of an entire orchestra in the pit are mounted along the stage front, backlighted by three red 7½-watt bulbs, procurable at any dime store. A blue spotlight, revamped out of two round tobacco tins, performs admirably from under the basement ceiling.

To make use of all available seating space, the projection booth is located in the adjoining furnace room, and movies are shown at an angle through a glassed hole in the wall. A home-made dual turntable unit is employed for furnishing musical background and sound effects. The portable loud speaker is set up near the stage. Even behind one of the port-

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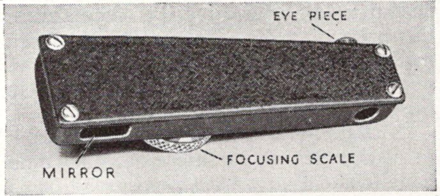

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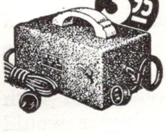

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holes a loud speaker has been mounted to provide music fresh from the parlor radio upstairs. Hence, guests may listen to their favorite radio programs during the intermissions.

But mere ownership of a homemade movie theater is no guarantee of a smooth presentation. House lights should be dimmed and footlights brought up as the initial footage is being screened, and at no time should the auditorium remain completely dark. Professionals have discovered that softly glowing lights will help to reduce eye strain.

When editing your films, replace all white leader strips with black, and cover the lens quickly as the trailer passes through the projector gate to prevent bright glare. A black-coated ketchup bottle cap serves nicely as a lens cap for fadein and fadeout effects. Careful attention to all minor details of projection will insure favorable reactions to your movies from every member of your audience.—

Development of Flash

(*Continued from page 37*)

ture and it was ready for duty.

The next step was to set it firmly on the lens board supports. This was also a matter of experimentation. In a short time the whole problem was solved. A small arm was attached to the cocking lever of the shutter and the lens mounting was turned at an angle where the buzzer armature could trip it with a downward movement. An ordinary flashlight with three 1½-volt batteries supplied the current to operate the synchronizer.

As in the case of the powder flashgun, no one individual could claim the credit for originality in making a synchronizer for the use of flashbulbs when they came into use. While we were working on our own models, so were other photographers, and we more or less pooled our efforts. In the early part of 1930, almost every newspaper cameraman was working with some sort of synchronizer, all of them home-made.

As the flashbulb was perfected to a dependable stage, with some degree of light uniformity, synchronizer manufacturers appeared on the scene. At first there was a flashgun known as the Hipwell, which was made in Pittsburgh.

The next in line was the High-Speed flashgun invented by a newspaper man named Grogan. This lamp came to the front for a short while. It was operated by the cable release which also closed the circuit. The tripping mechanism was attached to the front board and was set in motion by magnetic control. This gun was built into a special handle which also held the camera.

Today there are two types of guns recognized as outstanding products in the synchronization field: the Mendelsohn and the Kalart. The Mendelsohn gun is of the magnetic type operated with the buzzer system. The tripping of the shutter is on much the same principle as that used by the pioneers though many

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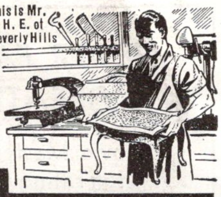
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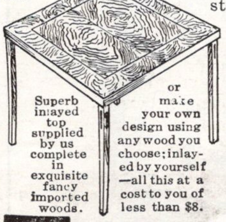

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refinements have been made in its adaptability to the camera. The Kalart employs a different system. This gun has a special spring device which is attached to the shutter and its tripping is done by the cable release which also closes the current and fires the bulb.

The very latest development, and incidentally it is not ready for general use, is the photoelectric cell synchronizer invented by Harry M. Biele, chief engineer of the Associated Press. This flashgun is entirely different in many respects. The light from the bulb activates a photoelectric cell which in turn controls the tripping device. The tripper is electrically operated but cannot be set in motion until the flashbulb is actually fired.

This gun was originally designed to meet the requirements of Associated Press photographers. Like other types, it is made to employ any standard make of flashbulb. Mr. Biele, its inventor, is still working on some refinements which will eventually be beneficial to all flashgun users.

An important apparatus which has been installed in the factories of all synchronizer manufacturers is the oscillograph. When flashguns go out of order, as some do, the manufacturer can make a definite test in his own laboratory. The oscillograph reading tells exactly whether the gun is firing too soon or too late, according to the shutter speed tested by it.

Since the introduction of synchronization there have also been various homemade methods of testing the results. One simple way is to place the battery handle, with a small light bulb in it, directly in front of the lens and in the center. Set the shutter and watch the groundglass. When the circuit is closed the light of the bulb will be seen on the groundglass. The amount of light seen on the glass tells the story of correct or imperfect synchronization.

The matter of perfecting finer synchronization will naturally keep pace with progress made by flashbulb makers. The combined refinement of flashgun and flashbulb are inseparable. Cooperation between the manufacturers of each will bring forth future advancement, though the early, practical steps were taken primarily by the news cameramen whose livelihood depended on getting good pictures under any and all circumstances.—▶

★ PHOTO QUIZ ★

These are the correct answers to the Photo-Quiz on Page 62 of this issue.

1. Development of your film and prints actually stops when they are immersed in short stop bath.
2. The Pola-screen is especially useful when photographing store windows where there are likely to be undesirable reflections.
3. A weak projection light is preferable to a strong light for enlarging thin negatives.
4. The "Tessar" is one of the most popular lens formulas because of its ability to render very sharp definition.
5. The statement that orthochromatic film is color blind is incorrect. It is highly sensitive to all colors except red.
6. You would have an excellent tray cleaner.

A Free-Lance Laments

(*Continued from page 38*)

a plan which is bad for the entire photographic profession. They offer, say, five dollars for *negatives* made of their equipment at work. Of course, it is necessary for the photographer to make and show several, in order to sell one. Some of these manufacturers demand 8 x 10 negatives, and will buy none smaller. Do you know why they want their negatives 8 x 10? No, it is not because the smaller negatives will not blow up, for they are buying only top quality negatives anyway. It is because projection prints cost more to make than contact prints, and from this negative for which they will pay five dollars (it would cost them 10 to 20 times that much to get negatives at their own expense) they have a great many prints made for their publicity department. Then, when an editor wants a print of a farm tractor at work in the field, instead of buying it from such markets as are available to him, he writes the publicity department of this concern, and gets all the prints he wants without charge. The publicity department gets some free publicity by having cheap photographs of their tractors appear in print; the editor gets a print which costs him nothing, and the photographer finds himself competing against his own work, at ruinous terms!

Case history: Photographer "Z," age 30, no previous evidence of insanity in the family. "Z" saw a swell new tractor in a field, in a photogenic and dramatic setting. He made a series of shots and offered them to the factory, which selected one out of ten submitted, paying $5 for print and negative. It so happened that the negative was only 2¼ inches square, but there was nothing about the print to indicate its size. The buyer expected to get a negative the same size as the print, 8 x 10. He was quite upset, made it clear that he would buy no more negatives of this size, but would pay in the proportion of $5 for 8 x 10.

"Z" figured that, if he has as good luck in acceptance as in this case, he would have to shoot only 4,000 exposures to do a total business of $100, but of course his expense would have to come out of that amount.

This photograph has been used in several magazines of nation-wide circulation and no one knows to how many other uses it has been put. A single sale to the right market would have netted at least $10 with negative retained by the photographer, and had it reached the right market might have brought much more. "Z" was completely cured.

One free-lance photographer to my knowledge makes a flat price of $2 per print for everything sold, with no guarantee of any kind as to exclusiveness, first rights, etc.

Another has a sliding scale of prices, with no floor and no ceiling; has sold identical prints from the same negative to one buyer for $1.50 and to another for $35, with a very good reason in both cases: reason 1 being the buyer would

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not pay more; reason 2, the buyer was willing to pay it. If there is any other business or profession in the United States with such trade practices, I have never heard of it.

The pitiful part of the whole situation is that, in some respects, these practices, silly as they are, seem to be justified. Other merchandise is sold almost altogether on the basis of cost of production and competitive conditions. Free-lance photography just does not seem to be adaptable to such yardsticks. It is probably more comparable to free-lance writing, in which an article or story in some minor publication might be worth five dollars, but the same words, if acceptable at all to a national magazine like the *Saturday Evening Post,* might be worth five hundred.

Fortunately, all markets are not poor markets, and all buyers do not expect the photographer to do all their speculating for them. A case history:

Photographer "X" received a rush call for a stock photograph. He did not have it, but was able to make it that afternoon, and had it on the editor's desk in a far distant city the next morning by air mail. A purchase order was issued for the photograph, but no price specified, so, taking a running broad jump in the dark, "X" billed it at $25.

"Dear X," a letter came in reply. "We are passing your invoice today at fifty dollars, as this is the price we ordinarily pay for such material."

It was X's turn to drop dead.

(Author's note: All cases cited in this article are true, and can be verified by correspondence.)—⚑

Candid Shots

(*Continued from page 8*)

vertisers' apparatus regardless of merit. They go into quite a glow over several worthless machines . . ."

Let it be clearly stated that the editorial contents of POPULAR PHOTOGRAPHY has never been influenced by advertisers. We consider it part of our job to describe photographic inventions and apparatus, however, we do not praise and don't go into a glow.

As a matter of fact, the Editorial Department of this magazine knows just as little about the contents of the ads in the forthcoming issue as any outsider. By the time we can satisfy our curiosity about the ads in any one issue, the editorial contents of that issue has been long edited and "put to bed."

JULIEN BRYAN, on one of his highly successful lecture tours, dropped in to say hello to us the other day. Confronted with letters from readers of his article in last month's POPULAR PHOTOGRAPHY, he admitted that it was indeed possible to make good travel pictures even if one carried somewhat lighter equipment than the three movie cameras, four Leicas and one Speed Graphic he usually takes on his trips. He promised that in his next article he will give the amateur new, practical pointers on how to get the best possible results while photographing abroad.—*A. B. H.*

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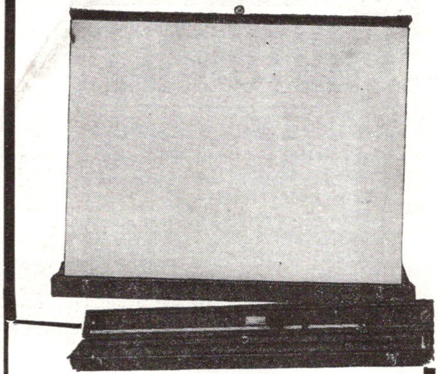

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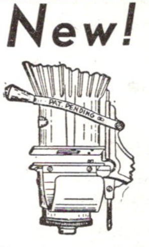

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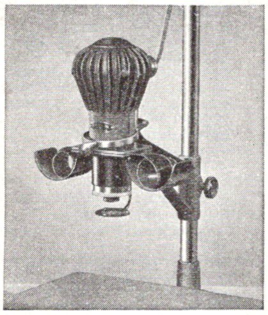

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Made especially for miniature films, this new American-made Kaler Enlarger produces "blow-ups" of marvelous detail—with a minimum of effort! Simplified negative holder eliminates all fumbling and scratch risks in handling strip negatives. Also enlarges portions from larger negatives, film or glass.

Uses standard 60 watt bulb. A.C. or D.C. Cool in operation. Double condenser system. Yields exceptionally brilliant and fast illumination. With Wollensak 2" focus f4.5 lens (in iris diaphragm) Kaler enlarges without emphasizing flaws.

Kaler has aluminum castings throughout—accurately machined, precisely aligned. Construction is compact, rigid, durable. Here, truly, is *the enlarger to match the finest miniature camera.*

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SUPERB RESULTS

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KALER ENLARGER
MINIATURE - 35 MM. (OR UP TO 1/2 V. P.)

Trade Notes and News

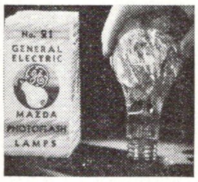
(*Continued from page 66*)

35c per bottle (sufficient to make over 200 tests) and will soon be available from dealers. It is distributed by Wholesale Photographic Supply Co., 145 East 60th St., New York City.

ANNOUNCEMENT is made of a new Fedco Adjustable Developing Tank with snap-lock cover that makes it absolutely light proof, by Raygram Corp., 425 Fourth Ave., New York City. The tank is made of bakelite, has a wide funnel for filling and side vent for pouring. Center core is hollow to allow insertion of thermometer, and the spiral reel is adjustable to all sizes from 35 mm (36 exp.) to No. 116 inclusive. Priced at $3.75.

A NEW movie titler that eliminates printed titles and the job of setting up individual letters is the new Universal Automatic Titler announced by Universal Camera Corp., 28 West 23rd St., New York City. This device is capable of setting up three rows of twelve characters each by means of 36 small wheels, each operating a continuous ribbon of 42 characters. The device measures 4x8⅛" and can be used with any movie camera. It sells for $3.95.

DEVELOPMENT of a new all-foil-filled "news" Photoflash lamp—relatively small in size but surprisingly high in effective light output — is announced by the General Electric Company. It will be known as Photoflash Lamp No. 21. Flash characteristics are such as to permit sure synchronization. The flash is rated at 50,000 to 60,000 lumen seconds as contrasted to the 45,000 lumen-second flash of the larger No. 20. The new lamp is said to provide sufficient light to permit the taking of satisfactory pictures at distances up to 15 feet from the subject at 1/200 sec., *f* 11, with fast panchromatic film. Lamps are priced at 20c.



No. 21 Photoflash.

SEVERAL important features have been incorporated into the new Pilot Super roll film reflex camera. It has a built-in exposure meter of the visual type, removable lens, eye-level finder, and metal focal plane shutter with speeds up to 1/200 sec. Another feature is the choice of two picture sizes, either 12 pictures 2¼x2¼ or 16 pictures 1⅝x2¼. The Pilot Super is available with the following lenses: *f* 4.5 ($25); *f* 3.5 ($32.50); *f* 2.9 ($40). Further information may be obtained from the distributor, Burleigh Brooks, Inc., 127 West 42nd St., New York City.

AN ENTIRE new series of home movies is being produced by Beacon Films, 53 E. Ohio St., Chicago, Ill. Issued once a month they will cover every angle of sports, travel, education, and humor, and retail as follows: 8 mm, 50′, $1.75; 180′, $5.50. 16 mm, 100′, $3.50; 360′, $10. Sound-on-film, 350′, $17.50.

A SIMPLE, self-explanatory reading method and additional sensitivity is claimed for the recently announced Photrix SS exposure meter with its high output photocell. The meter is encased in a one-piece bakelite molding with no protruding parts. All figures are under glass, very legible, and arranged so as to simplify operation. The Photrix SS sells for $17.50. Additional information may be had on application from the distributor, Intercontinental Marketing Corp., 8 West 40th St., New York City.

CELLOPHANE envelopes for filing negatives are available in three popular sizes—for 35 mm, 2½x3½, and 3½x4½—and distributed by National Photo Labs, 816 Third Ave., New York City. These envelopes prevent scratches and are easy to file. Prices sent on application.

A PROTECTIVE device for use in connection with flash bulbs is announced by Wholesale Photographic Supply Co., 145 East 60th St., New York City. It is a tumbler-shaped guard made of acetate stock that is simply inverted over the lamp. The device, known as Flashgard, comes in two sizes, at 75c and 85c. Write to the distributor for further information.

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His First Year

(Continued from page 25)

right and slightly above the subject with the light concentrated on the head and shoulders. A 500-watt flood was placed below the lens and slightly to the right of the cameraman, and an intense condenser-spotlight, which Hutchins uses to get "punchy" effects, was placed to the left above the model and concentrated on the face.

But although Hutchins has done a great deal of excellent high-key photography, some of his finest work has been definitely in the low-key mood. It is indicative of his technical as well as his pictorial ability that not a single example of either type which he has sent out for exhibition has ever been rejected.

At the Yonkers Salon this year *A Gentleman of Verona* was awarded a blue ribbon for the "best print in the show" rating. At the New York Salon of Photography, which hung four of Hutchins' prints with the highest total rating of any entrant, Nicholas Ház, in commenting on the work, said that Hutchins' low-key studies called *Apache* and *A Gentleman of Verona* were without question practically perfect pictures. Recently Hutch received notice that four of his prints have been hung in the Philadelphia Salon—an honor which, as far as the oldest member of the club can recall, has never been given to any photographer before.

Looking at the character studies that Hutchins has done, the average amateur is liable to exclaim, "But that's all costume stuff. I haven't any costumes like that to work with, and I can't get any."

Truthfully, Hutchins hasn't many of those costumes either. In making *Judith* a piece of lace that happened to be in the house was draped over the model's head and shoulders. *Apache* was costumed with the same ease and homey simplicity. Hutchins' picture of the cowboy, called *Pete,* wasn't costumed at all. A friend of his, Pete Martinez of Tucson, Arizona, the famous cowboy artist, came to town to participate in the annual Madison Square Garden Rodeo, and Hutchins brought him up to the studio to pose.

Frequently Hutchins is asked where he gets his models, for all of his work has that character which comes only from the fortunate combination of an excellent model and technical skill.

"My models," he says, "are my friends, my mother, my father, but I take their pictures not because I like them personally but rather because they all have interesting faces. I particularly like to photograph people with "flat" faces. They are much more photogenic."

Time has shown that Hutchins can do a great deal with most anybody. Since his work has begun to attract attention he has been swamped by people who want him to take their pictures. In a small way he has done some of this, but he avoids it as much as possible. He doesn't get any fun out of it, and to him the time involved is practically

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wasted. Once he has made his prints he invariably gives the negatives to the subject, being no longer interested.

Technically, Hutch is one of the most careful of photographers. In taking his pictures in the studio he usually works at apertures of *f* 16 to *f* 32 to get absolutely perfect sharpness and detail throughout. Today instead of using 5x7 negatives he prefers 8x10's and doesn't expect to change. By using the same panchromatic film at all times he has come to know his exposure under practically all conditions, and therefore does not depend on an exposure meter in his work.

Perhaps the secret of Hutchins' success lies in his absolute devotion to critical detail. In development he agitates continuously, and although he develops all of his negatives by inspection he rarely turns on the dark green safelight for any period of time, preferring to flash it for a few seconds or less rather than chance any possible fogging of the negative. For his negative development he prefers a personal glycin formula with a short-stop bath before fixing.

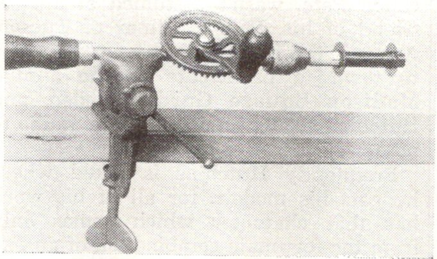
In printing his negatives Hutchins works with a mercury vapor type enlarger stopped down to give plenty of time for any dodging of the print which he may feel is necessary. Development is invariably in amidol for bromide prints.

Chalking the final print to match tones, and spotting the print whenever necessary are the final steps in finishing up his work. Because of the general trend toward larger exhibition prints he makes 14x17 and 16x20 prints, in most cases, instead of 11x14's.

At the Camera Club they are saying, "John Hutchins will be heard from today," and they mean it.—⚑

Darkroom Film Winder

FILM winders for loading 35 mm film in the darkroom come at all prices, but the one shown in the photograph has served well and cost only 50 cents, 25 cents for the hand drill, and 25 cents for the small bench vice, both purchased in the five and ten cent store.


Hand drill and vise make film winder.

The reel on which the film is wound fits over the wooden pin shown. This pin is merely a piece of round doweling of the proper diameter, into one end of which a screw has been placed. When the head of the screw has been cut off, there remains a shank which may be placed in the chuck of the hand drill. This device is very satisfactory, and is most easily used when mounted as shown, the left hand guiding the film and keeping it taut, while the right turns the crank.—*I. Clyde Cornog, Philadelphia, Pa.*

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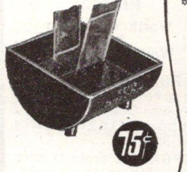
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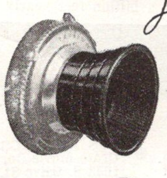
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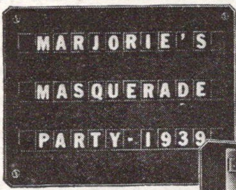

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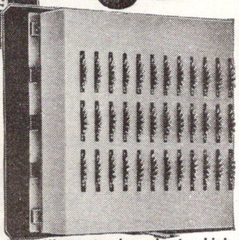
Front View, showing specimen set-up . . . ready to shoot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Photomurals

(Continued from page 21)

done in a small home-made shop or in a huge production studio, a photomural from start to finish involves the taking of pictures, the enlargement of pictures, and mounting them on a wall instead of on a bit of board or in an album.

No two persons will agree on the exact number of steps required in producing a photomural and no two producers will take the same number of steps. We list here what we consider the vital steps.

First comes *selection of the picture*. This may be done mentally or actually. It may take days, weeks, or months. It is vital. Taste, requirements of the interior and of the photomural, a dozen factors enter in. But no one can make a photomural without a picture.

The second step is welded with the first. It is *measuring*. Areas must be measured with infinite accuracy. If curving walls are involved, corners, obstacles of any sort, make proper allowances. If the job is at all intricate, call in a carpenter or paper-hanger. Have him make the measurements, too, and check with yours. And remember, photomural paper stretches and is applied wet. The degree of stretch varies but you can count three-fourths of an inch to the yard in *width* of the roll.

Now comes a step that has a wide variety of application but it is considered important no matter how simple the job may be. It is called preparing *the visual*.

In a large installation, this involves the making of a scale model of the interior of the room, mounting the mural on this model in proper proportions, and studying the results. Obviously, few amateurs would need to go to such trouble for a relatively simple, one-panel or one-wall photomural, but even here a visual is helpful. Make a visual in the form of a pencil sketch, including the details that are to be close to the finished photomural — the doors, windows, curtains, or other objects. This is a preliminary step, like the first two.

Up to this point, you have done little but plan. You are now ready to go into production and the first step is the *preparation of the negative*. Just how large this should be, what has to be done to it, and many other details depend entirely on the job at hand, the size and power of your enlarging equipment, and other factors.

It is essential that every flaw be eliminated. Retouching here will prevent registry of an enlarged defect on the finished print. If the negative is to be enlarged by sections, that is, if only parts of it are to be printed at one time, as is usually the case, it must be marked in such a way that the prints can be matched, centered, skived (skiving will be explained later), and identified. And the markings must not show on the finished print as it is to appear on the wall. Furthermore, all these markings must be applied with due allowance for the later stretching of the paper.

Some producers make scratches on the

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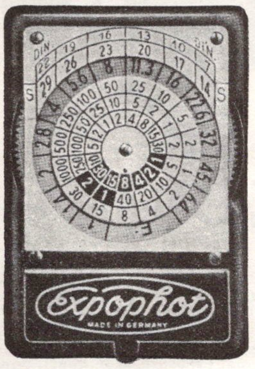

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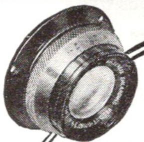

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negative itself for their marks. This ruins the negative for later use. A better way is to apply easily removable gummed tapemarkers or a cellophane covering.

It is often necessary to "step up" a small negative for enlarging, that is, a miniature negative may be enlarged to 4x5 or 8x10 size and this used for projection printing. This step will be governed entirely by the enlarging equipment you have and the requirements of the job.

You are about ready to go to production but not quite for next comes *checking exposures,* a step that gives you proof of the quality of your negative, correct timing, etc. There are dozens of important details in the photomural but one of its obvious requirements is uniform tone of all the sections. This demands accurate exposure time as well as accuracy in developing and testing negatives.

Except for the degree of enlargement and the need for carefully matched and identified areas, the *enlarging process* is essentially the same as one follows on an ordinary job. In selecting the paper, call for photomural paper. It comes in rolls of varying lengths, usually twenty and forty inches wide. The cost of the paper varies with your locality, but the approximate cost for a ten-foot roll, twenty inches wide is $2.00 for single weight and $2.50 for double weight. In the forty-inch width the costs are respectively $3.75 and $4.75. The size you need and the quantity, of course, will depend upon the job. Single weight paper is usually used in the twenty-inch size and double weight in the forty-inch size.

It is essential that the paper used on the entire photomural be of the same emulsion to insure uniformity of appearance and to require no variation from the developing process established by the check of the exposures already made. No enlarging equipment, regardless of size, should be taxed beyond its most efficient capacity. Exposure time must be watched with the greatest accuracy.

Developing after exposure proceeds in the usual manner except that the large sections of paper require adequate tanks. Skill is required and great care must be taken in handling the large sheets of paper to prevent wrinkles that would cause blisters. The developer must also be watched with the greatest of care to preserve uniform strength. No rules can be set up for this, it is simply something that must be done.

You may construct your own tanks for developing, fixing, and washing in several simple ways. Perhaps the simplest is to make a frame of the desired size and then line it with oilcloth or rubberized, waterproof material. There should be sufficient developer in the tray to completely cover the print. The amount will vary of course with the size of the tray and the size of your enlargement.

Ordinary photomural prints usually develop to the proper point in not less than two and not more than three minutes and then are shot into the *stop bath* for immediate halting of the developing process until they can reach the *hypo fixing bath* where they should remain for not less than ten minutes and not

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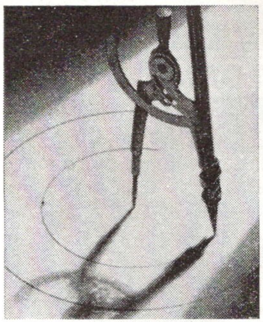

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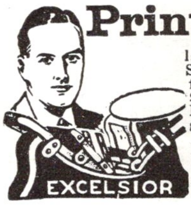

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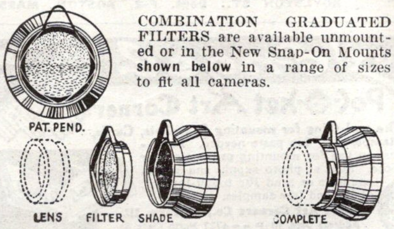

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more than fifteen minutes. Use a hypo bath of known test.

Next comes a quick rinse for removing surplus hypo and then the prints are ready for *washing* in a thorough manner. Here, the kind of equipment used will often tell the difference between success and failure in the finished photomural. The wash water must be filtered, properly circulated, or the print moved properly, and water temperature must be close to that of the hypo.

In large scale photomural production, the prints are usually washed in tanks of running water that insure a complete change every fifteen minutes. After the fifth water change, the prints are immersed in a glycerine solution to keep them from getting too brittle when dry. After washing, apply a dependable test to detect hypo.

Special racks are used for *drying* large size photomural prints in the larger plants, but the method and equipment used at this stage are easily adapted to the special needs of the situation. A simple way of doing it is to take a broomstick and drape a length of chicken wire over it. The wet print is then draped over this to dry. The chicken wire keeps the folded print from sticking together. Before the prints are bone dry, they should be rolled up with the emulsion side out to prevent curling.

If they are allowed to remain in this state for a few hours, they will be easier to handle for matching and *skiving* which consists of cutting the paper through the *emulsion only* and then tearing the edge on a bevel on the back of the print. This gives a good side for the joint which should be as flat and as nearly invisible as possible on the finished job. At this time, test the sections for matching before mounting.

It is now about time to get ready to think of *preparing the wall* for the mounting. When mounting on plaster, the wall should be free from fresh or unslaked lime or other "hot spots" likely to cause chemical action and discoloration. A sizing coat of Clark-Stecco "C" paste is applied to the wall and allowed to dry. Muslin cloth is next put on. Special photomural mounting muslin may not be available to everyone. If ordinary muslin is purchased, wash it thoroughly in soap and water, before using it on the wall to remove all sulphite which is present in most commercial grades of muslin. Edges or "seams" between sections of the cloth are butted or overlapped and cut through when dry. The channel so made is filled in with Swedish putty. After the cloth is dry, it is gone over once more with the paste size. This double treatment builds up added assurance against disastrous chemical action later.

The stage is now set for *mounting the prints* which are soaked with a sponge, first the face and then the back, or immersed in water to allow the paper to expand without wrinkles. Surplus water is removed by squeegee. The adhesive used is Clark-Stecco "C" paste, evenly applied and not too wet. If the hanging is a large job or complicated in any manner, call in a paperhanger. The mounting requires good wall-paper hanging

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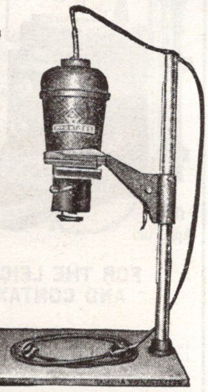

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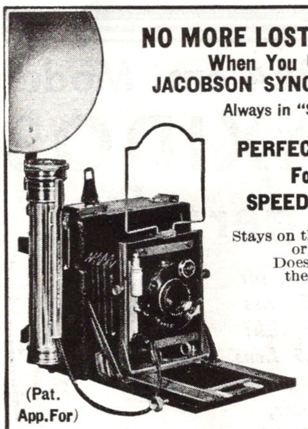

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technique. The order in which the sections are mounted will depend upon their number. The sections are usually numbered from left to right. For instance, if there are to be five sections, the order will be No. 3 first, followed by No. 4 and No. 5, or by No. 2 and No. 1. In a four-section photomural the order recommended is No. 2 first, followed by prints No. 3 and No. 4 and No. 1. The sections, if properly exposed, have ample allowance for overlap and outside trimming.

The day after the mounting is a good time to go around and *check all the joints* to see if any have become raised. Those that have, are laid down with paste which is then wiped off carefully. Care should be taken not to press the edges down too hard.

After the photomural is fully dried, on the wall, it should be gone over carefully for *spotting* to remove any blemishes that may not have been caught in the original retouching or other processes. Tiny specks that were invisible to the unaided eye when the negative was in its original size may now be conspicuous because of the enlargement.

The final stage is *lacquering* which is done after the photomural has been spotted, all the edges fastened down and the job made thoroughly ready for this last step. A recommended lacquer is "Kodalak" which has been especially made for this work. Spraying is the best method of application. Thinner used should be suited to the lacquer employed. This is extremely important.

Usually, a small moulding is recommended to go around the entire photomural to prevent the edges from coming up. It may be had in a wide variety of finishes and material, and should be put on before lacquering.

The above steps are those regularly followed on a typical job. Many installations can be made by mounting the photomural on "portable panels" of various materials and attaching them to the walls by rabbeted moulding at top and bottom with additional thin moulding strips between the sections to prevent bulging. These portable photomurals have many advantages and eliminate the last stage of mounting on a fixed wall. Other applications for the smaller photomurals are on the popular house floor screens although this use does not constitute a true photomural in the usual sense of the word.

Obviously the beginner will not attempt too large a job for his first experiment unless he has satisfied himself that he can handle the task. Two persons are required to handle large sheets of paper in washing and mounting and other assistance may be necessary. The size of the job and the kind and capacity of the equipment will naturally determine these steps. All-in-all you should be able to turn out a mural for between $5.00 and $10.00.

Of paramount importance throughout the entire consideration of the photomural, is the original picture. Many amateurs not wishing to follow through with *the full* production of a photomural may nevertheless "shoot" pictures for these installations. Photomural companies are

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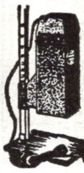

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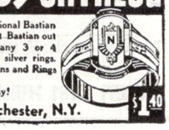

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Now set your mount face down on a table and cement ¾″ strips of thin cardboard on the back of the mount around the two sides and bottom of the window, leaving ⅜″ margins between strips and window. Cut a backing from regular mounting stock 9¾ x 11 and cement this onto the strips. To mount your print merely slip it into the slot.—*H. V. Landry, Chicago, Ill.*

Simple and Double Relief

(Continued from page 27)

with its right and bottom edges *touching* the sides of the printing frame. In other words, the film being exposed was offset relative to the assembly through which it was being printed. An exposure of several seconds was made, the frame opened, and all films removed.

The other film of the signature and stars was then put in the frame with its right and lower edges *touching* the edges of the frame. The film just exposed was then replaced in the frame in the *same* position. Again an exposure was made. When this film was developed, the result was a relief image of the design superimposed on a positive image of the lake scene (Fig. 7).

The negative of the lake scene was then superimposed on this latter film but offset with reference to the *positive* image of the lake scene and in an opposite direction from the offset of the signature and stars. The two films were bound together in this position and a print made on paper. The result (Fig. 8) is a *duplex relief* print.

Dig up some old negatives and try your hand at this process. As you experiment you will find that an endless number of possibilities will present themselves to you.—▶

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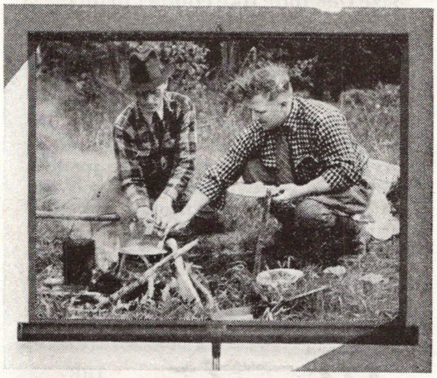

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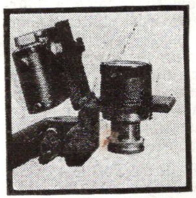

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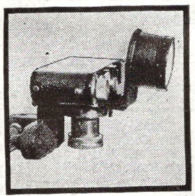

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Portrait Lighting

(Continued from page 15)

near the background. The overhead light serves a double purpose. It is the only illumination on the subject, and it illuminates the background at the same time.

None of these pictures are similar to each other. The single light was used dead front, high to one side, low in front, and directly overhead. Still different effects could be had by using the light high in front, directly to one side, low to one side, and high, low, or to one side on the other side of the subject. However, black shadows would appear in some pictures taken from these angles. The addition of a second light source takes care of illuminating the shadows enough to show detail.

In Fig. 5, for instance, a second photoflood has been added to the setup shown in Fig. 4. Its purpose is to kill the heavy shadow on the side of the face, and to show some detail of the clothing. In this instance it was desired to subdue everything but the features. A dark coat and hat were used to help obtain this effect. Compare this picture, for a moment, with that shown in Fig. 1. Here is a direct demonstration that light alone can make a profound difference in the appearance of the subject, and therein lies the greatest value of simplicity in lighting.

All pictures in the final analysis are built around a *single* light source. Look at any picture in a photographer's window, or in the better magazines. There is a single light source evident in the picture because highlights and shadows indicate its direction. It is easy to discover the direction from which the principal light is coming. It is more difficult, at first, to determine the direction and number of the supplementary lights. *And it is this principal single light source which gives the whole picture its basic foundation and its characteristic appearance.* If all the supplementary lights were turned out, a fairly interesting picture would still remain.

It is for this reason that it is excellent practice to get some one to pose for a series of pictures with a single light source. You will learn, and remember, what effect varying the angle of a single light will have on the subject's appearance. From then on, it will be easy to get almost any effect, simply by using the basic effect of the main light, plus fill-in lights.

Suppose an effect similar to that in Fig. 1 is wanted which will give, in addition, a little more roundness, a little more detail in the dark hair, and a more natural expression around the eyes. All that is necessary is a second light above the first, as in Fig. 6. This higher light is moved in toward the subject until a light shadow appears under the nose and under the brows. The subject now looks much as she appears under normal room lighting.

Moving both Photofloods still higher gives an approach to the quality and direction of daylight. It is not enough to know that high light sources will produce a certain effect. It is necessary to take

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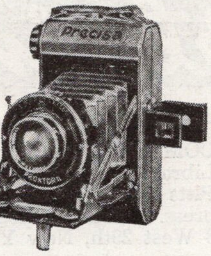

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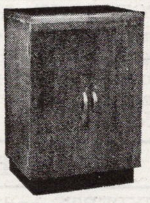

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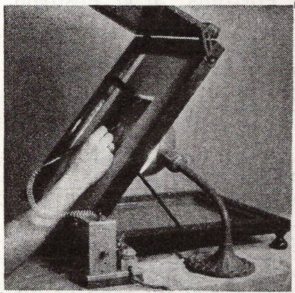

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pictures yourself in order to learn exactly how high the lights must be for the desired result. This will permit you to have a clear idea of exactly what you want before you begin.

Occasionally three light sources will be required. Figures 7 and 8 illustrate such a case. The second light in Fig. 7, used to fill in the shadows, is a considerable distance back from the subject. Shadow detail barely shows, and the subject's head stands out boldly from the dark background. Incidentally, this lighting is much better suited to men than to women subjects. The angle of the light reveals the texture of the skin very clearly and the dark tone of the whole picture is more suggestive of masculinity and age. Notice in Fig. 7 that the hair blends into the dark background. If you wish to show the shape of the back of the head, as well as separate the subject cleanly from the background, the addition of a third light at some distance from the subject will accomplish this. The effect rendered, and the position of the backlight, is shown in Fig. 8. So, from the simplicity of one light source, we have come to the complexity of three, by easy stages, and the complex stands revealed as essentially simple.

No one will make good pictures simply by following these diagrams. There is no claim, in fact, that these are good pictures. Their primary purpose is to show what happens when light comes from certain angles and distances. After experiments have been made with single light sources, one excellent way to learn to visualize the effect that is wanted before the picture is begun, is to find a picture that you like. Clip it out and have it in front of you the next time you try a portrait. Try to duplicate it. Put in the basic light first. Add other lights until your subject looks just like the picture. Click the shutter. If you have learned your broad main effects with a single light source, you will find this easy to do. Ere long, you will be able to identify at a glance the lighting used on any picture that you see. Then you will be far enough along the way so that no subject will baffle you. You will be able to create lighting effects to suit the mood and appearance of your model.

Simplicity does it. Know the effect you want. Learn how to get it. Be able to recognize it when you have it. That is all there is to taking pictures that you and other people will like.—

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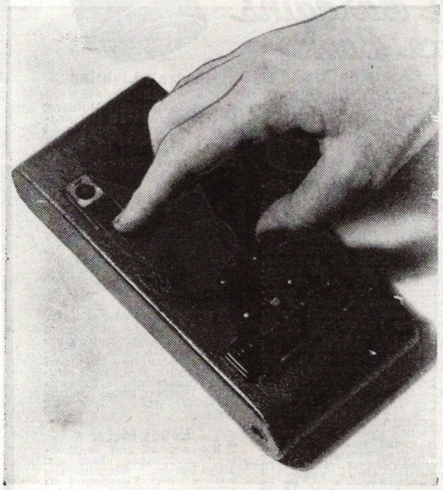
RUBY WINDOW COVER

by Charles R. Emery

IF YOU use sensitive panchromatic film in your camera, and if your camera is not fitted with a window cover, you have experienced the annoyance of using tape over the window.

After using this tape for some time, with its many drawbacks, I decided to build a safety cover that would be foolproof.

Two brass ticket holders, shown at (E) in the drawing, were used to make a perfect cover.



A safety cover on the ruby window of your camera eliminates the use of tape.

Cut one of these holders to 1⅜" long as at (A). Drill a hole in the end; ⅜" will be about right.

With a pair of pliers straighten out the bent edges of the other holder and cut off exactly where they were bent as shown at (B). Cut this piece to the shape shown at (C). All dimensions are given on the drawing. Bend a 1/16" lip at the end of the narrow section, shown at (C), for a finger hold to work the slide. File the edges of the wider section until it slides easily in the section with the hole. By giving the slide a slight bend it will slide easily and stay in place when not in use.

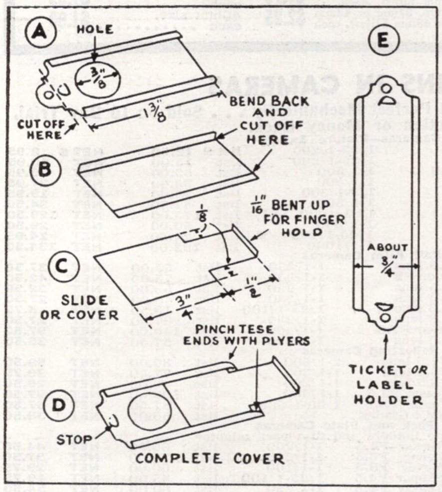


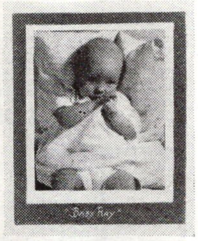
Diagram showing the steps in making the cover from two brass label holders.

Place the slide in its holder and pinch the ends of the sides down at the point shown at (D).

This completes the cover. Give it a coat of black enamel and be careful not to get any of the enamel under the slide or it will stick. Centering the hole over the ruby window, attach the cover to your camera with a drop of liquid solder, sold at any ten cent store.—⚑

Printing Gray Borders with the Enlarger

BORDERS ranging in tone from light grey to black can be made with an enlarger by a very simple method. With the masking done in the enlarger, the negative is projected onto the easel so as to cover an area about one-half the paper size. Cut a piece of heavy black paper to cover and extend over the projected image from ¼" to ½" on all sides. Place the sensitive paper on the easel and make the exposure. Then, with the red safety filter before the lens, place the black paper over the exposed area. Remove the negative, and with the mask still in place, raise the enlarger until the light covers the size of border wanted. Remove the safety filter and expose according to the tone desired. The sensitive paper is then ready for development.



Print with border.

Borders with titles can be made by printing on the border area with a soft lead pencil before exposure. Proper spacing is assured if the border is projected through the safety filter while the lettering is being done on the paper. The pencil marks can be removed with the fingers during development, leaving the letters white.—*Leonard Pavatte, Nashville, Tenn.*

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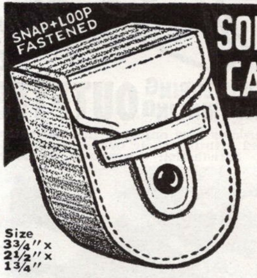

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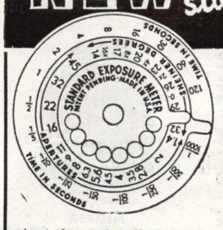

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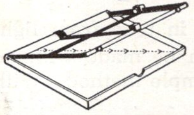

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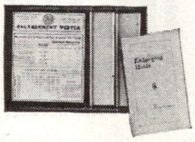

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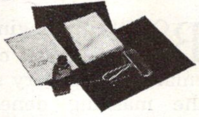

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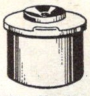

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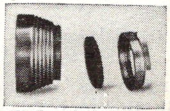

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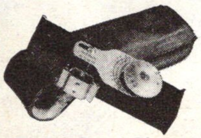

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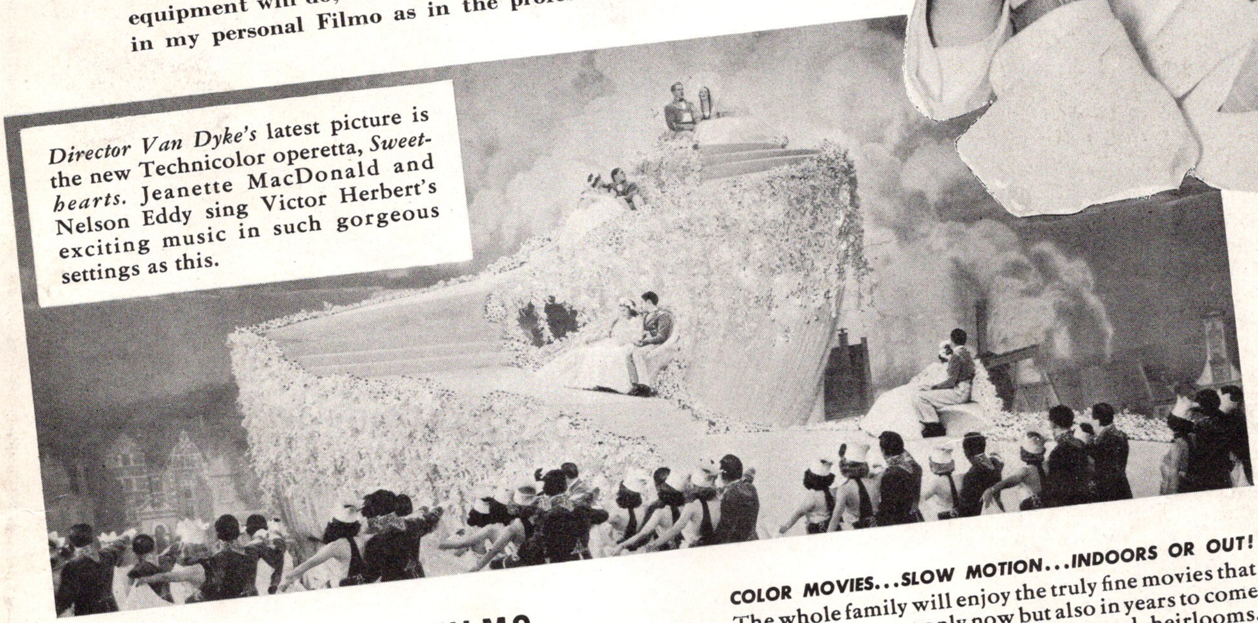

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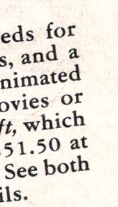

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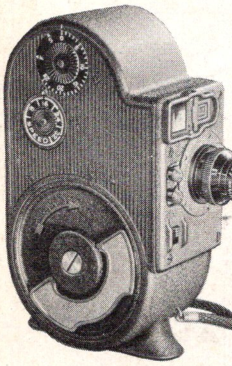

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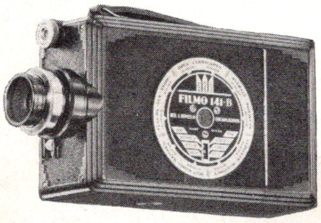

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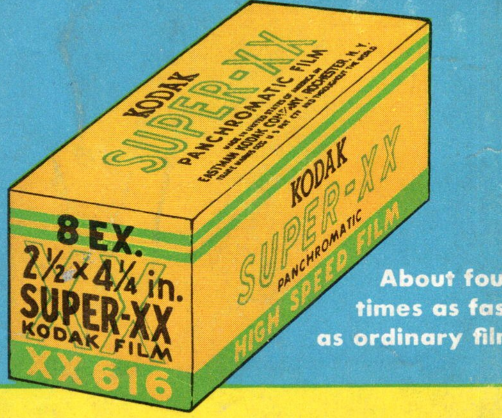
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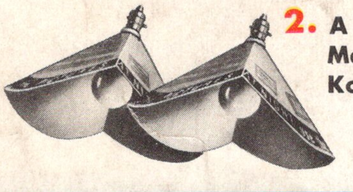

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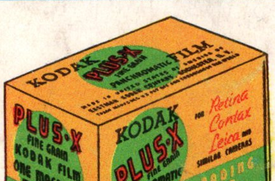
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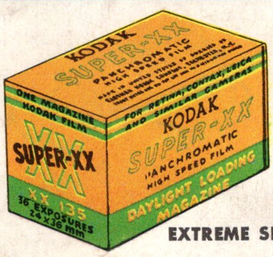
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KODAK PANATOMIC-X
FX 135

EXTREME FINENESS OF GRAIN

KODAK PANATOMIC-X FILM

in miniature sizes. Enlargements that are many times original negative size show no appreciable graininess.